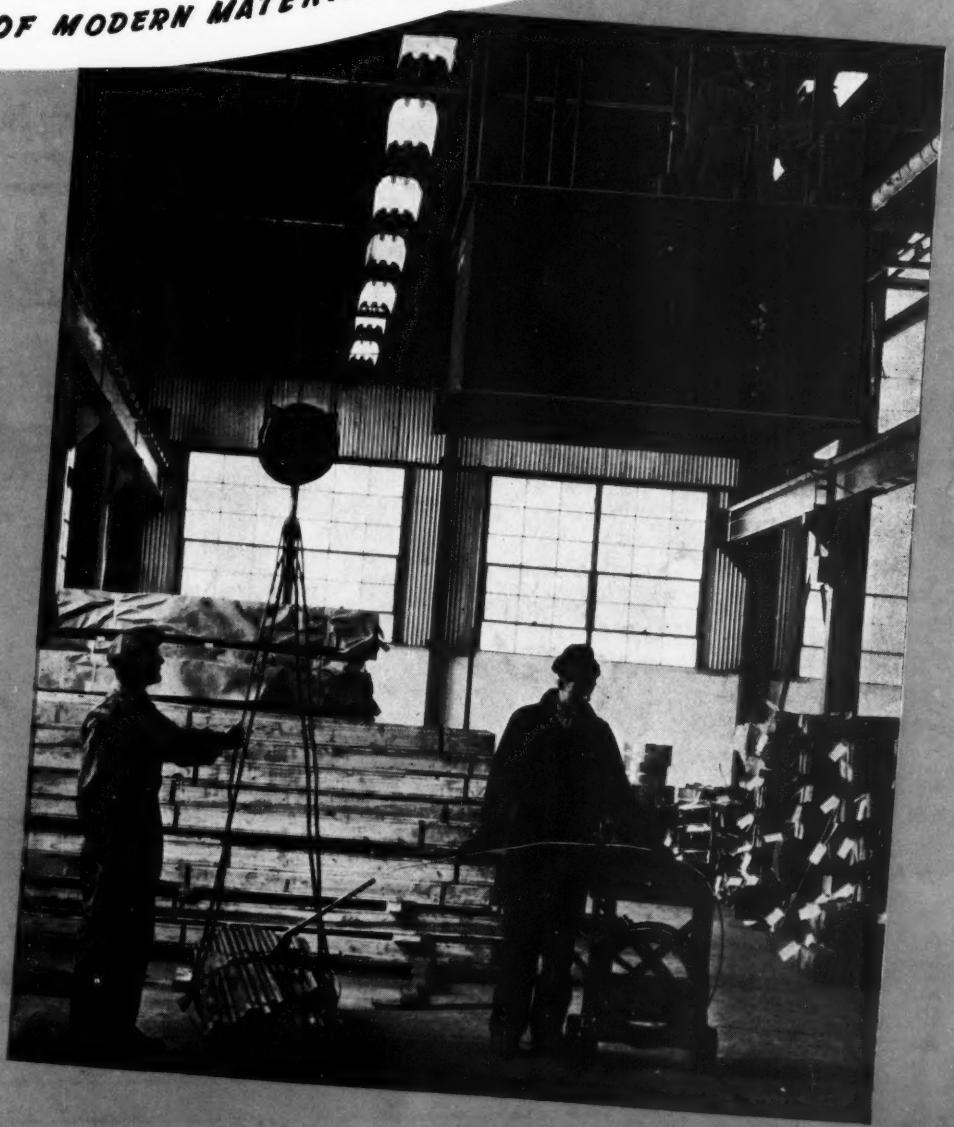
Flow

THE MAGAZINE OF MODERN MATERIAL HANDLING AND PACKAGING METHODS

AUGUST
1948



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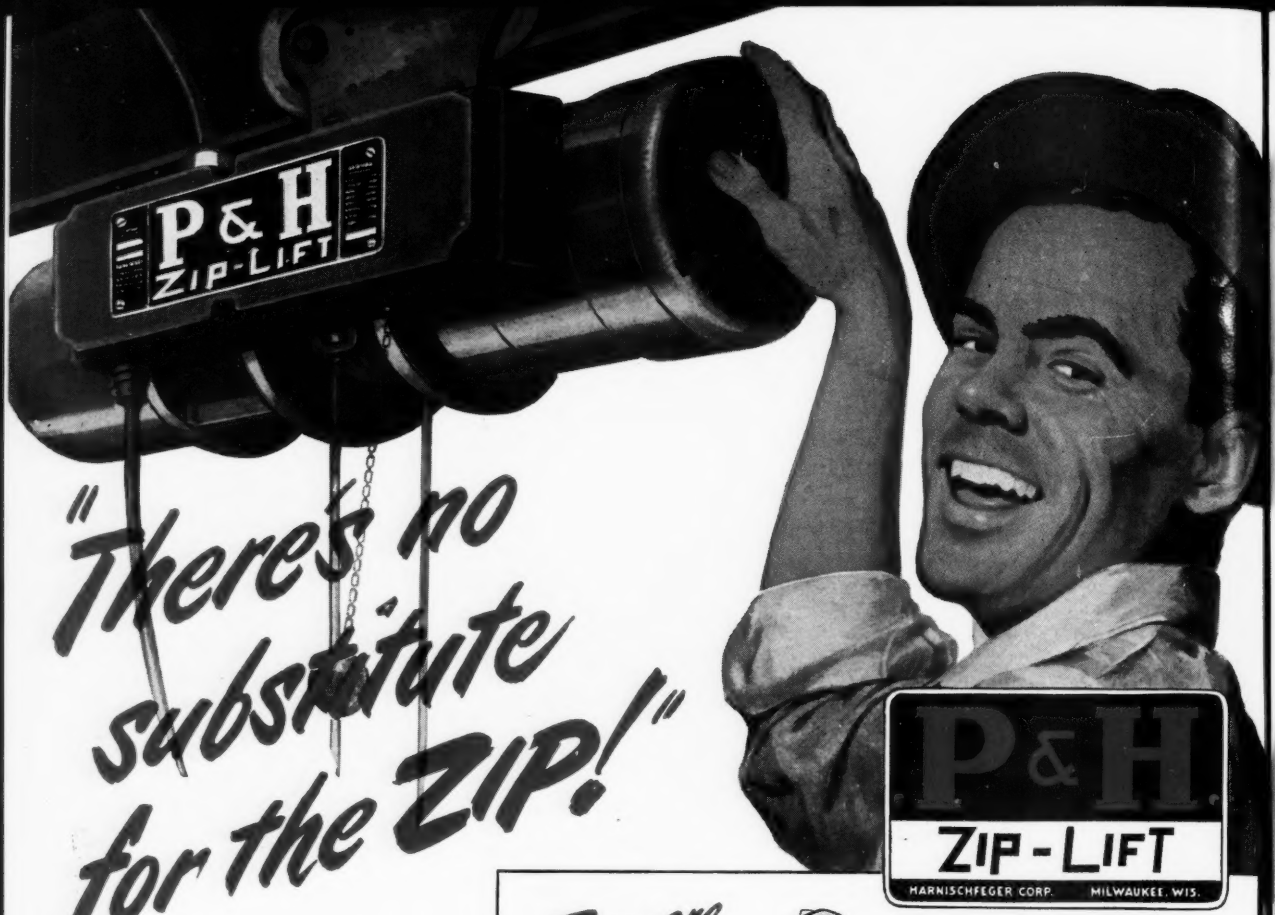

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THAT'S why I like to install these Zip-Lifts! They don't have to be replaced every few years. They do everything *right*—and don't give us trouble. No wonder, experienced users say— *"there's no substitute for a Zip!"*

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These are added values!

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AVAILABLE IN CAPACITIES UP TO 2000 LBS.

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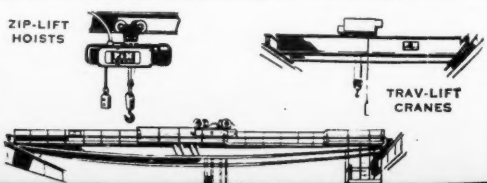

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Please mail me, without cost, complete facts on how I can cut my material handling costs with Automatic Electric Trucks.

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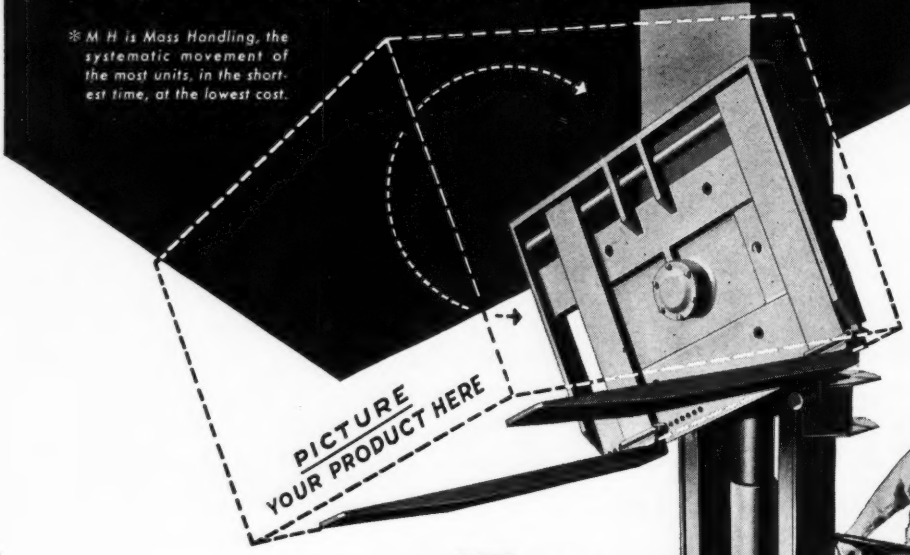
Is Your Plant as Modern as Your Product?

Step Up Productive Output with TOWMOTOR MH*

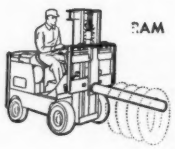
Overcome the handicap of obsolete handling methods—let Towmotor Mass Handling help you increase productive output in your plant. Versatile, gasoline-powered Towmotor Fork Lift Trucks and Towmotor Accessories provide all the benefits of modern handling techniques for every plant, large or small . . . handling raw materials and finished products of every size, shape and type . . . 24 hours a day. Turn to Towmotor for the solution to your handling problem. Follow the lead of the men who have to make handling pay a profit. More *professional handlers* use Towmotor than any other fork lift truck.

If your handling problems cannot be solved with a standard Towmotor unit, our engineers are available to analyze your procedures and design special equipment necessary to meet your specific needs. Details available without obligation.

** M H is Mass Handling, the systematic movement of the most units, in the shortest time, at the lowest cost.*



Towmotor Fork Lift Truck, Model LT-50, equipped with Towmotor Revolving Carriage Accessory for transfer movement of bulk materials.



SEND FOR FREE BOOK!

Towmotor Fork Lift Truck and Tractor Guide—informative, helpful information about the complete line of Towmotor materials handling equipment. Send for a free copy.

TOWMOTOR CORPORATION

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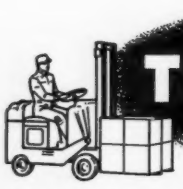
REPRESENTATIVES IN ALL PRINCIPAL CITIES IN U. S. AND CANADA



TOWMOTOR FORK LIFT TRUCKS *and* TRACTORS

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

AUGUST, 1948
VOLUME 3, No. 11

Flow

COVER PHOTO—Orders for round stock are handled with dispatch at Viking Steel Co. Cab-controlled crane in low-bay area delivers steel-banded bundle from scale platform to delivery truck. See article "Modern Steel Warehouse."

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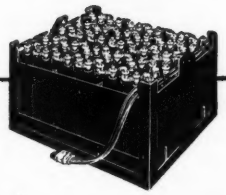
These Battery Trucks MAKE Money!



In Industrial Trucks,* EDISON *Nickel-Iron-Alkaline Batteries Give You These Important Advantages

They are durable mechanically; grids, containers and other structural parts of the cells are of steel; the alkaline electrolyte is a preservative of steel.

They can be charged rapidly; gassing cannot dislodge the active materials.

They withstand temperature extremes; are free from freezing hazard; are easily ventilated for rapid cooling.

They are foolproof electrically; are not injured by short circuiting, reverse charging or similar accidents.

They can stand idle indefinitely without injury. Merely discharge, shortcircuit, and store in a clean, dry place.

They are simple and easy to maintain.

SURE, we put in our battery industrial trucks to economize on operating costs—and they've done that . . . reduced damage and injuries, eliminated demurrage, freed hands for other work. And by tiering stock to the ceiling, they've saved us the expense of building two new storage bays. But more important, they've given us new earning power, increasing our overall plant productivity nearly 25 per cent without a single foot of new floor space.

These battery trucks can keep the pace 24 hours a day every day, and their power characteristics can't be beat: instant starting; quiet operation; no fumes; no power used during stops. And remember, each of their electric motors has only one basic moving part—that means trouble-free operation.

Of course, we've standardized on EDISON Nickel-Iron-Alkaline Batteries for powering them. EDISON has been the most rugged, dependable and long-lasting battery on the market for the past half-century . . . the kind we can bank on to keep our material-handling system—*and our record-breaking production schedule*—right up to snuff!

EDISON

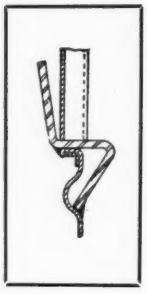
Nickel • Iron • Alkaline

STORAGE BATTERIES

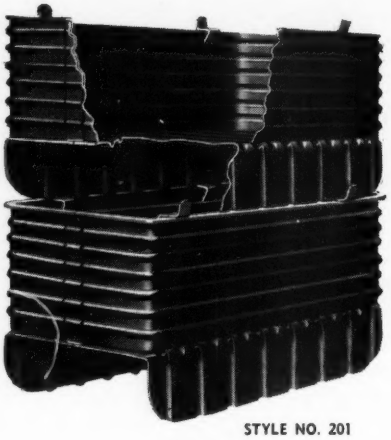
EDISON STORAGE BATTERY DIVISION OF THOMAS A. EDISON, INCORPORATED
West Orange, N. J. In Canada: International Equipment Company, Ltd., Montreal and Toronto

POWELL PRESSED STEEL
TIERING AND CRANE TIERING BOX PLATFORMS

This supplementary sketch shows the detail of the POWELL Tiering Lug. Each lug provides ample bearing surface, thus facilitating the stacking of units. Lugs are securely arc welded as shown and so arranged that the load stress is carried vertically by sides of box and legs of platform.



By the use of POWELL Tiering lugs this Box Platform allows use of full size box, thus giving greater cubical capacity.



STYLE NO. 201

EXTRA HEAVY DUTY CRANE TIERING WELDED BOX PLATFORM

STYLE NO. 203

A welded Box Platform equipped with long crane lugs and bumper channel runners to meet extreme conditions where extra sturdy construction is necessary. The long crane lugs, which are securely riveted to box and platform, carry the load of the unit from the platform instead of from the box.

CASTER EQUIPPED BOX

Here we have a standard two-piece box equipped with either swivel or stationary casters bolted to pressed steel channels. This provides a live box for handling materials which can be moved by power lift trucks or by hand. This type of box can be made with casters bolted to a plate on the bottom of the box, eliminating channels for use where only a live box is needed.

Other Designs of Caster Boxes can also be furnished.

STYLE NO. 309

Representation in Principal Cities

THE POWELL PRESSED STEEL CO.—HUBBARD, OHIO

"ORIGINATORS of Cold Formed All Steel Handling Equipment"

IT'S TERRIFIC!
IT'S TELESCOPIC!

the new Yale
WORKSAVER
TILTING FORK ELECTRIC TRUCK

ONLY 83" HIGH WITH FORKS LOWERED

JUST RIGHT FOR

...operation under low clearances
...in freight cars and motor trucks
...high-stacking pallet loads

10-FOOT TELESCOPIC LIFT. That's what you get in this new Worksaver Tilting Fork Truck. Specially designed to high-stack loads up to 3,000 lbs., this powerful electric truck combines space-saving economy with savings in time and effort to cut your handling costs.

Dimensionally right—83" high, 33" wide—for easy operation in and out of freight cars, motor trucks and crowded storage and production areas. Electric lift, tilt and travel. Battery capacity for two full days' operation without recharging. Two safe forward and reverse speeds—with finger-touch control. Safety "stop-on-a-dime" braking power. Rugged construction for years of service. These are only a few of many reasons why the Yale Worksaver deserves a place in *your* material handling system.

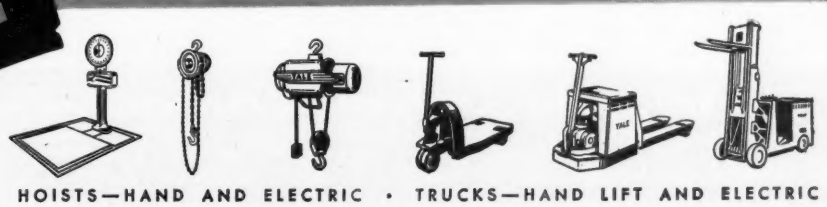
Get complete information—now. See your telephone book for nearby Yale representative or send for catalog P-1076. The Yale & Towne Manufacturing Company, 4644 Tacony Street, Philadelphia 24, Pa.

CAPACITIES

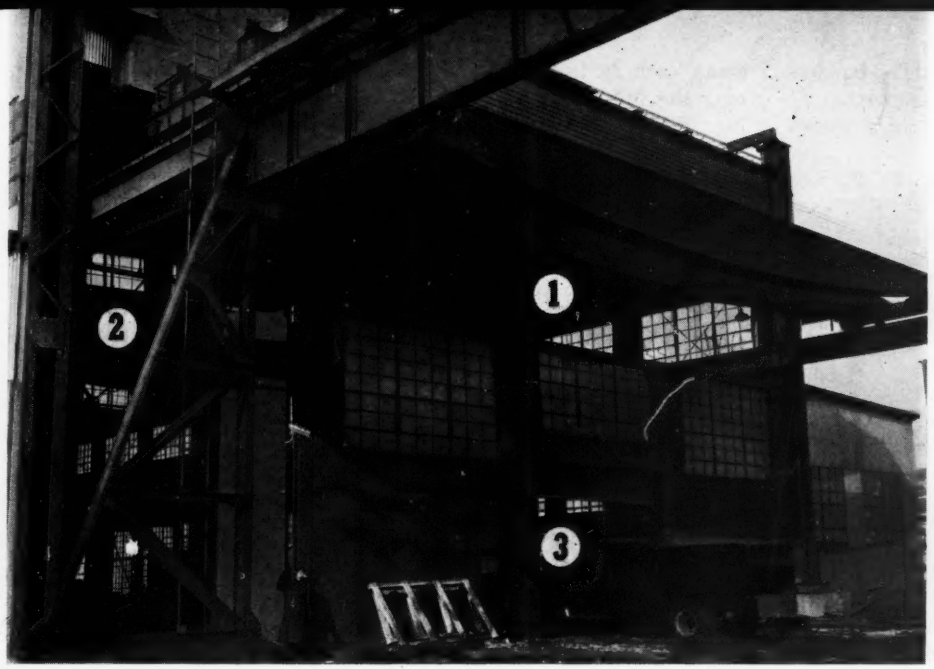
2000 LBS.
up to 48" load length
2500 LBS.
up to 36" load length
3000 LBS.
up to 28" load length

MATERIAL HANDLING MACHINERY
CUTS PRODUCTION COSTS...SAVES TIME...SAVES EFFORT...PROMOTES SAFETY

YALE



INDUSTRIAL DIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC



IN-AND-OUT CRANE TRAFFIC passes through overhead doorway (1); cab and load clear through railroad door at side (2); and (3) is door for delivery trucks.

Modern Steel Warehouse

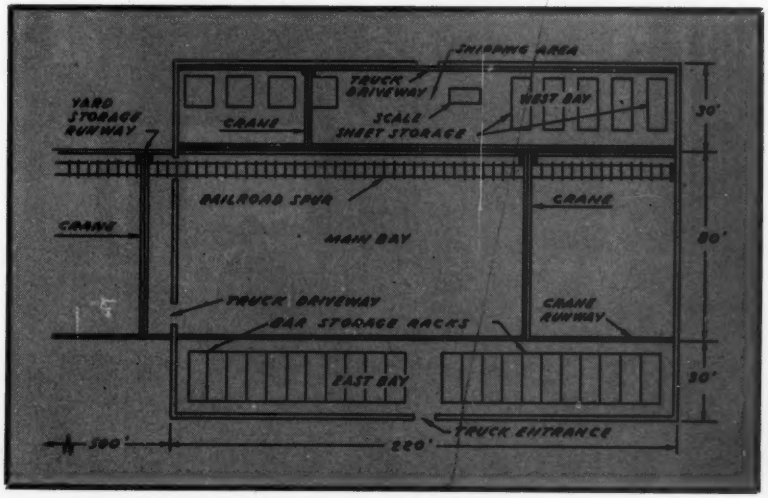
A new steel warehouse . . . a 720-foot crane runway for continuous indoor and outdoor operation . . . a 7-ton one-piece door operated by push buttons . . . movement by truck, rail and bridge crane . . . a four-area plant layout for segregation of stocks . . . and other features.

A combination of overhead handling equipment is used in the new warehouse of Viking Steel Co., Cleveland, for transporting large volumes of various types of sheet and bar stock. Upon completion of a recent study, it was decided to add a fork truck for handling bar stock into and out of tiering racks. The truck will also transport other materials between bays, thus relieving the cranes for the heavier loads.

The new plant was designed for easy handling of the various types of stocks in three bays, shown in the accompanying layout sketch.

Operations were started within the past year while walls and other parts of the building were being completed. Two 15-ton bridge cranes were installed shortly after the superstructure and the roof were constructed, and steel stock was moving in and out of the un-

CAB-CONTROLLED BRIDGE CRANES
CHAIN SLINGS, TIERABLE RACKS
STEEL STRAPPING



FLOW SHEET shows 720-foot crane runwa bays and storage areas.

finished structure while builders rushed its completion.

The two 15-ton bridge cranes span the 80'x220' main bay of the warehouse, operating on runways 28 feet above the floor. A four-car capacity rail spur runs the length of the building on the west side. The layout also provides ready access for over-the-road vehicles, which can move into the main bay through any of the three truck driveways shown.

The main bay is flanked on the east and the west by two low bay areas, each 30 feet wide and running the full length of the building. While the main storage area is used for large-size stock, the smaller bays are used for storage and processing of higher grades of sheets and bars.

The fourth part of the 60,000 square foot layout is the outdoor storage area, tied into the warehouse operation by a 500-foot-long continuation of the crane runway from the plant. Stocks not affected by weather are stored in the yard.

The 720-foot indoor-outdoor crane runway with its 7-ton door is a feature of the layout. An opening is provided in the south wall to permit crane traffic from and to indoor storage and the yard. The opening is closed between crane trips by a huge elevating door electrically operated, which measures 12′ high by 80′ wide. Weighing seven tons, it is raised and lowered by a counter weighted cable system connected to a three horsepower motor. Activated by push buttons, the crane is operated at floor level by the crane follower. The installation keeps the cranes out of the weather when not in use in the yard.

Since loads suspended from chain slings could not well clear the 12-foot high opening, such lifts, transported in or outside, are carried through a doorway in the south wall. This door, adjacent to the first one mentioned, is approximately 28 feet high and is installed across the rail siding. While the bridge of the crane passes through the overhead door, the fixed cab passes through the adjoining folding door. The L-shaped opening for both doors is a minimum opening for this type of traffic. Thus a positive reduction in heat loss is effected and relatively even working temperatures are maintained within the building.

Shipments of all types of steel are usually received by railroad cars which are spotted in the ware-

(Turn to page 36)

80-FOOT SPAN OF CRANE covers main bay. Rail spur at one side uses minimum storage space.

TIERABLE RACKS for bar stock in east bay. Handling here is designed for fork truck.

SCALES, ORDER FILLING. 5-ton bridge crane in west bay expedites outbound truck loads.

Carpets HANDLED EASILY Overhead

The handling of heavy rolls of broadloom has long been a cumbersome, back-breaking job. Now a system has been adopted by leading department stores which makes the lifting, cutting, storing and handling of these rolls an easy, one-man operation. Here is how it is done.

AS AN encased roll of broadloom enters the receiving department, a grab hook mechanism, suspended from an overhead monorail system, is slipped around its center. Rolls shipped in burlap covers are moved to the cutting floor by a sling.

Positioned on the cutting floor is a cutting table, inside of which is a cradle which may be from nine to 18 feet long. An independent, mobile unit, its sides are constructed of steel angles, which are mounted on ballbearing wheels. From each of the sides are spaced wide strips of heavy duck webbing, which adapts itself to the natural shape of the broadloom roll and creates a cradle.

CUTTING TABLE CRADLE receives carpet. Roll remains in cradle during storage and handling.

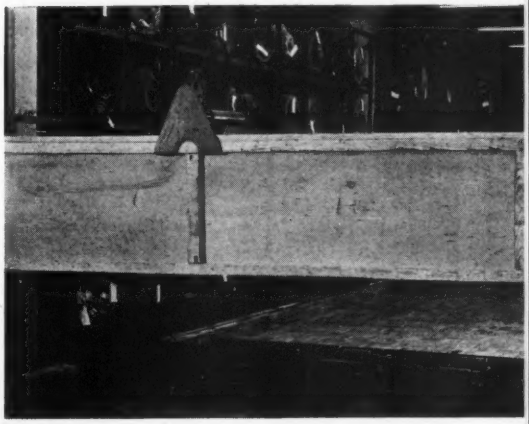
Traveling to Storage

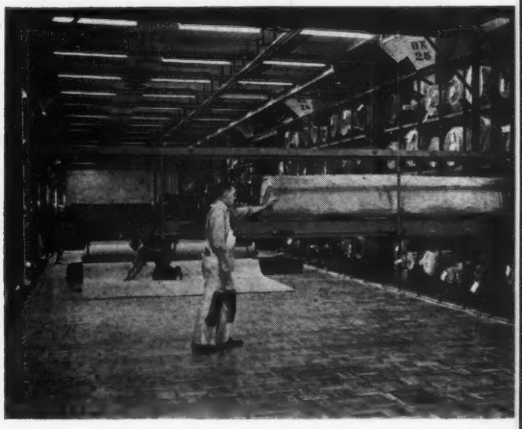
Running along both sides of the cutting floor are tiers of storage compartments. An overhead traveling crane, electrically controlled, rides above the top of the compartment framework. The crane lifts the crate (its top has previously been removed) and tilts it, causing the broadloom to roll into the cradle. Once the roll is so deposited, the crane is lowered and two steel lifting bars straddle the cutting table on either side. The table is then anchored to the crane, and the roll is elevated and carried to its appropriate storage compartment. Each compartment has steel channels which serve as tracks on either side of its bottom. The trackage provided inside the cutting table comes into line with the trackage in the compartment and the ballbearing cradle of the broadloom slides into the storage space. To remove a roll, the procedure is merely reversed. Since the compartments and cradles are numbered and all rolls are constantly visible, the system simplifies stock

(Turn to page 58)

GRAB HOOK carries cased broadloom and places it for loading onto table.

CRANE CONVEYS cutting table with cradled roll to compartment. Note second table in rear.





PLANNING A PALLET PROGRAM

. . . when building handicaps must be overcome

If you've thought your building is not suitable for pallet handling, you may get a different idea from the approach taken to the solution of a similar problem by S. C. Johnson & Son, Inc., Racine, the country's oldest manufacturer of wax for home and industry. With planned methods and correct application of handling equipment, costly building changes may not be necessary. This case study shows that it can be done.

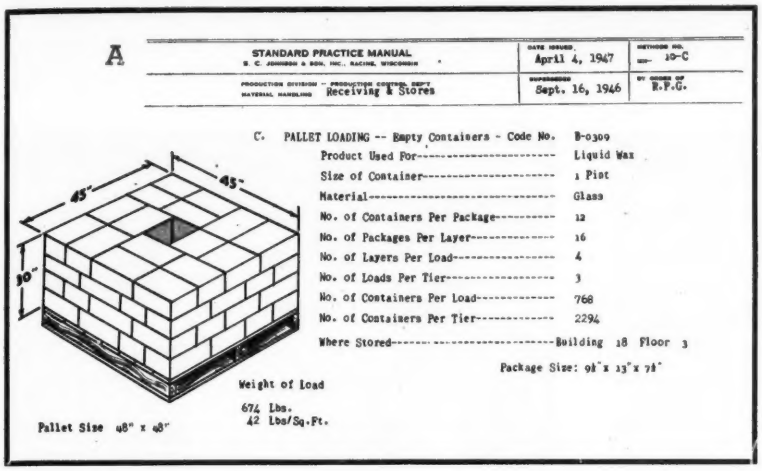
By C. W. SHERWOOD, Industrial Engineer
and
J. R. POYSER, Methods Engineer
S. C. Johnson & Son, Inc., Racine, Wis.

OUR company adopted pallet handling for a diversified line of raw materials and containers about a year ago. We started our program with a survey of our 300 raw materials and containers, the receiving dock, storage areas (floor load capacities and headroom), elevator capacities, followed by the many details of physical handling. Containers were an important group of the items to be considered —flat carton stock, tin, glass, closures, and others. A big job in this preliminary survey was to measure all packages in order to determine the optimum pallet sizes.

Planning the Program

On the basis of the data gathered in the survey, we developed a Standard Practices Manual, a project which preceded the arrival of the fork trucks and pallets in the plant. The purpose of the manual was to predetermine methods as

Narrow car dock is no obstacle to pallet handling. Powered hand pallet truck overcomes the handicap.



A

STANDARD PRACTICE MANUAL
S. C. JOHNSON & SON, INC., RACINE, WISCONSIN

DATE ISSUED: April 4, 1947 | METHOD NO.: 10-C

PRODUCTION DIVISION -- PRODUCTION CONTROL DEPT.
MATERIAL HANDLING: Receiving & Stores

SUPERSEDES: Sept. 16, 1946 | BY ORDER OF: R.F.G.

C. PALLET LOADING -- Empty Containers - Code No. B-0309

Product Used For	Liquid Wax
Size of Container	1 Pint
Material	Glass
No. of Containers Per Package	12
No. of Packages Per Layer	16
No. of Layers Per Load	4
No. of Loads Per Tier	3
No. of Containers Per Load	768
No. of Containers Per Tier	2294
Where Stored	Building 18 Floor 3

Package Size: 9¾" x 13" x 7¾"

45" 45" 30"

Weight of Load
674 Lbs.
42 Lbs/Sq.Ft.

Pallet Size 48" x 48"

A GLASS CONTAINERS, with sample sheet from Manual.

B PARAFFIN SLABS are stacked three to a layer.

C PINWHEEL of smaller bags, with two in center.

D NESTED DRUMS use maximum area of the pallet.

much as possible in order to enable us to have a starting point when the equipment did come in. These standards were of course subject to later changes as determined by experience and changing operating conditions.

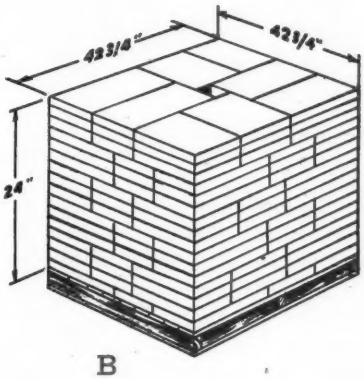
After we had the necessary information on the sizes of the many and varied packages, we drew up spread sheets in order to analyze the data and determine the pallet sizes as well as the quantity of pallets that would be necessary. We made up a layout sheet for variations in pallets ranging from 36"x 42" up to 48"x60". By use of paper templates cut to the same scale as the pallet layout sheet we determined the number of packages of each type of material that could be placed per layer on each of the several pallet sizes. This preliminary study took many weeks. On the basis of this information, we established the relative efficiency of the various pallets, which were compared on a spread sheet. The comparison enabled us to arrive at two standard pallet sizes: a 42"x48" for raw materials, a 48"x48" for all empty containers and flat carton stock.

Working out the pallet capacities with the templates also gave us the stacking patterns for the materials of different sizes and in different packages. The development of the manual was important for other reasons. It was of great help to our operating people in the material handling department, headed by a supervisor who reports to the production control manager. Under the supervisor are three foremen, each responsible for operations in his department—receiving, shipping, stores. The material handling supervisor is responsible for the day-to-day operations and the execution of the procedures which are set up by the industrial engineering department together with the cooperation and assistance of the material handling personnel. Problems are discussed and we get a meeting of the minds. When the operating personnel find a more effective way of doing a job, the proposal is considered with the industrial engineering representatives. If the suggested method is found advantageous, it is adopted and the necessary change is made in the Manual.

Thus the Manual assures the consistent and uniform performance of methods from day to day and from week to week. This is important in our operation, because we receive certain types of raw materials at intervals of six months. When they do come in, the practice will be uniform and no time will be lost with unnecessary experiments.

Planning the Details

With the operations reduced to visual form in the Manual, each one can be studied and modified



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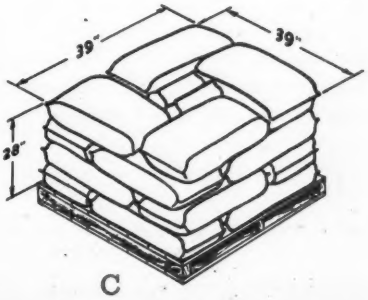

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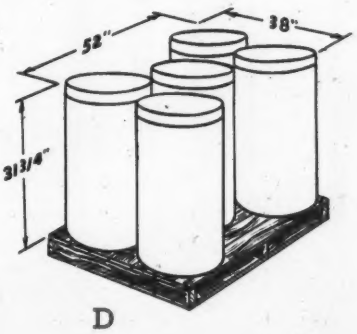


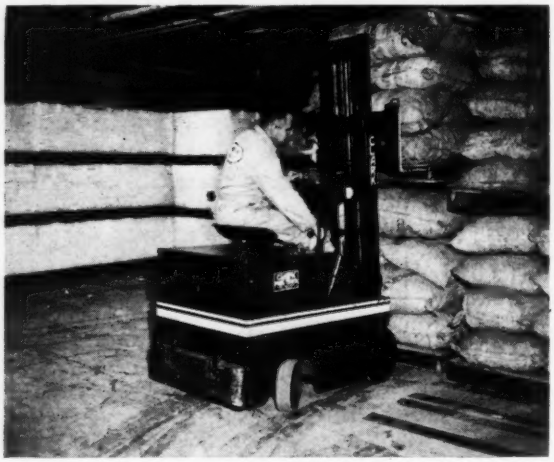
D

when necessary. Several drawings on these pages show the typical patterns that were developed for some of the products in slab form, in bags, drums and kegs. Each item is represented on a separate page in the Manual, with a drawing showing the specific stacking pattern adopted. Accompanying data name the material (or, if a container, the product for which it will be used), the units per layer, the number of layers per load, the loads per tier, total containers per load and tier, and so forth. Nothing is left to guesswork, as can be seen from a sample sheet reproduced on these pages.

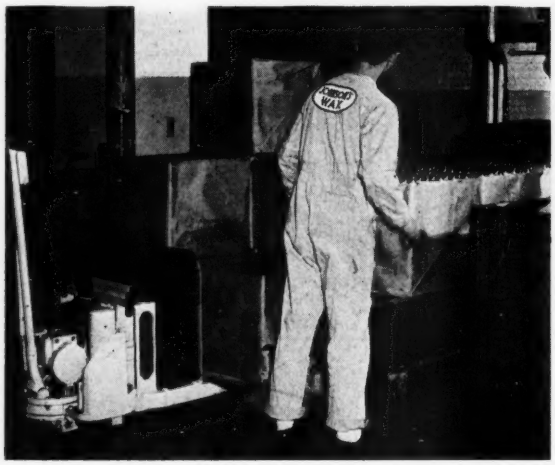
Drawing No. 1 shows a variation of the pinwheel pattern for empty glass containers which are 9½"x 13"x7½". Note that the pattern has four units in each corner, the units interlocking with those in the layers above and below. No. 2 is reproduced here because the pattern has a direct bearing on handling. These items are paraffin slabs 19¼"x11¾"x1½". They weigh a little over 10 pounds each. The feature here is that they are handled three slabs at a time in unloading from the cars, and hence each layer on the pallet is made up of three slabs. It will be noticed that in every sample shown the ratio of unused pallet area to the used area is at a minimum.

No. 3 shows another pinwheel pattern—with bagged material—which is a powdered clay product, 75 pounds to the bag. The pattern is made by placing a bag in each corner, leaving a fairly large opening in the center. As can be seen, two bags are placed vertically in this space, thus utilizing the pallet area to maximum advantage. We have another clay product in 100-pound bags. The same pattern is used for these larger units, leaving practically no opening in the center.

No. 4 shows the pattern developed for plywood drums of shellac which have an outside diameter of 19 inches and a height of 31¼



PALLETS ARE loaded to certain height to obtain maximum use from low headroom in storage.



MOTORIZED PALLET HAND TRUCKS are widely used. This one supplies containers to packaging.

BAG DUMPER. Bag is positioned on skip for charging melting vat. Note motorized hand truck.

SKIP IN DISCHARGING POSITION. Bag is retained by two hooks. This avoids shoveling, lifting.

inches. We found that by nesting these—lacing a drum in each of the four corners and one in the center —we kept unused space at a minimum.

While there is nothing novel about our use of these patterns, the point is that these details were planned ahead and adopted as part of standard procedure in the Manual. When the pallet hand trucks, the fork trucks and pallets arrived, we had a good start on the new pallet handling procedures and saved much time.

Purchasing Department Cooperation

In developing our new handling program, we found that the Purchasing Department could be of considerable help. For example, the vendor could furnish material in packages of sizes and shapes that were both easy to handle on pallets and in processing. One item that proved difficult was shellac in fibre drums that were too high to be tiered two high in a storage location where overhead piping reduced the headroom. Our purchasing department presented the problem to the supplier, who furnished the shellac in drums of a height suitable for our requirements.

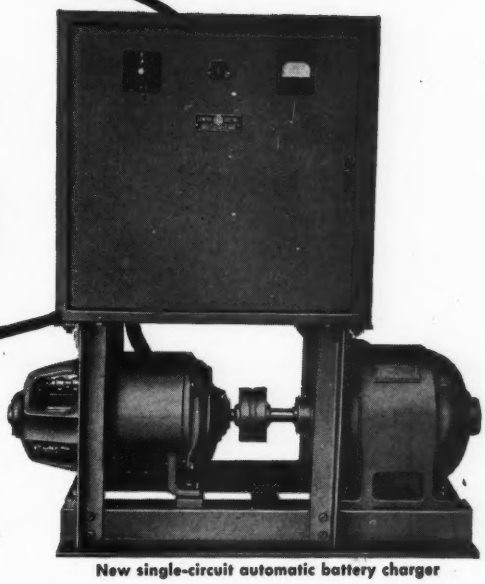
Here's another example. A particular type of wax had been received in metal drums, each containing a 350-pound cake. It had been customary to split the drums open with an axe and the large chunks were then handled into the melting vats with a block and tackle. This was a dangerous operation, due to the possibility of hot wax being splashed on the operator when the cake was released. Thanks to the cooperation from our purchasing department, we now receive this wax in 40-pound slabs, two or four to a carton, which are thus conveniently packaged for palletizing and for handling in processing.

Engineering the Material Flow

As indicated earlier, our buildings had served a number of years

(Turn to page 38)

it's *Easy* to use GE BATTERY CHARGERS



New single-circuit automatic battery charger

For lead-acid or nickel-alkaline batteries—for any number at a time—General Electric can supply the proper kind of motor-driven battery-charging equipment. With the help of your truck manufacturer, you can quickly select what you need from the many sizes available—knowing all G-E equipment is fully automatic, tailored to fit the battery, and protectively enclosed. All sizes comply with industry standards. More information in G-E bulletin, GEA-3923B. Simply ask your nearest G-E sales office or write *Apparatus Dept., General Electric Company, Schenectady 5, N.Y.*

Easy **to operate.** Fully automatic from start to finish, compact, easy to install, economical to operate—built for long life and dependable service—these motor-driven battery chargers comply with the Standard Specifications of the Electrical Industrial Truck Association.

Easy **to service.** A country-wide system of Service Shops means you can keep trucks on duty at all hours. A nearby G-E Service Shop will give you prompt and efficient help whenever you call for it. You can count on continuous service from your G-E charger.

Easy **to order.** Your electric truck manufacturer can help you select and will order for you the right G-E battery charger for any number of trucks. From this—one of the most complete lines of battery chargers in the country—you can be sure of getting the best in design, materials, workmanship, and performance.

NEW BATTERY-CHARGING EQUIPMENT AVAILABLE THROUGH YOUR

Truck Dealer

KEEP 'EM ROLLING WITH G-E CHARGERS

GENERAL ELECTRIC

760-2

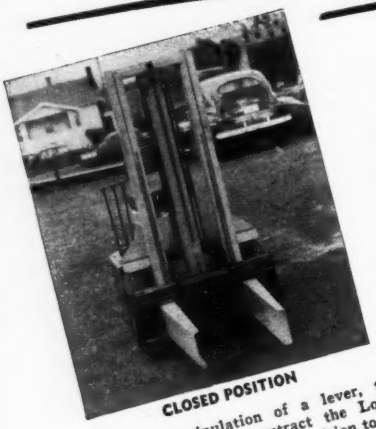
"Greatest advancement in lift truck equipment since pneumatic tires"

HYSTER Load-Grab

for use with HYSTER "20" and HYSTER "40" LIFT TRUCKS

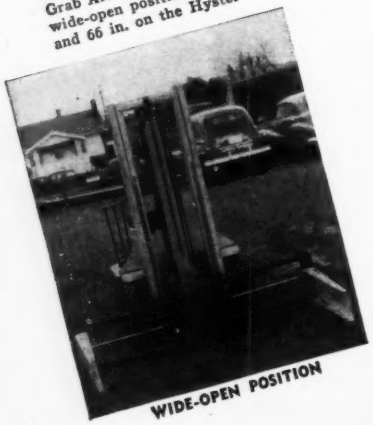
"LOW-PRICED • SIMPLE • EFFECTIVE • FAST"

Handles Bales, Boxes, Bundles, Bags, Barrels, Oil Drums... *without pallets*



CLOSED POSITION

By the simple manipulation of a lever, the operator can expand and contract the Load-Grab Arms from the closed 17 in. position to the wide-open position of 62 in. on the Hyster "20" and 66 in. on the Hyster "40".



WIDE-OPEN POSITION

what it is...what it does... Hyster Load-Grab is a simple, sturdy, hydraulically operated clamp device, with several different types and options of load arms. Load-Grab picks up any kind of a load as easily as you pick up a handful of cards.

how it does it... Hyster Load-Grab *side squeezes* with just enough pressure to lift and transport loads without the use of pallets . . . **Regular Load-Grab Arms, Rubber Faced Arms, Spike Faced Arms, Drum Handling Arms and Pallet Load Arms can be interchanged or installed in a few minutes.**

CONTACT YOUR HYSTER DISTRIBUTOR OR WRITE FOR LITERATURE

HYSTER COMPANY

THREE FACTORIES

2931 N. E. CLACKAMAS ST... PORTLAND 8, OREGON
1831 NORTH ADAMS STREET.. PEORIA 1, ILLINOIS
1031 MEYERS STREET..... DANVILLE, ILLINOIS

A MANUFACTURER SOLVES HIS SPARE PARTS PROBLEM

Here is how a manufacturer revamped his service parts department to avoid the evil of costly delays in filling orders. By systematizing (a) control, (b) layout, (c) bin locations, and (d) handling, a clear picture of available stocks and prompt service to customers resulted.

PYRAMIDING sales in an assembly-type plant were causing a serious bottle-neck in the service parts department. Although the manufacturer willingly suffered the pains of rapid growth, he was determined to give even the oldest model owners reasonable service on repair parts.

The product was subjected to heavy use through over-loading, rough-handling and excessive hours of service. The need for repair and replacement parts was abnormal and supply could barely keep up with the demand. To fulfill this need required unusually good control of every parts-item just as soon as it became available in the manufacturer's plant. It was here however that the Service Parts Department was failing. Back-orders were excessive, threatening to exceed the equivalent of six weeks' average shipments. Emergency shipments were being held over one and two days and customer complaints were mounting.

Management was alarmed for three prime reasons: 1. The threat to continued profits. Out of a $9,000,000 total yearly business, over $2,000,000 represented sales of service parts. 2. The dangers of deteriorating customer-relations with threat of losses of new business. 3. Fear of failing to meet its responsibility to keep vitally needed equipment on the job. (It may be noted that 1922 models of the company's products are still serviced from stock parts.)

Had it been possible to stabilize product-design, the solution of greatly expanded parts-sales would have been largely a matter of size. In the early days, however, almost every unit had been tailor-made for a specific application. In addition, lack of volume production had made it necessary to use a variety of purchased components and an equal variety of manufactured parts. The net result was a stagger-

WORKSHEET. It shows information necessary for stock analysis.

PROJECT Service Parts Analysis — SHEET 59 OF 84

COMPILED BY _____ — DATE 11/5/47.

○ GRP.	Part #	Description	ACT.	MAX.	BIN	BULK	NOTES
20	118203	Nut	100	300	⅛ RB.	—	
8	14CCT	Fitting	200	800	9″	—	¼ T. Surp.
7	502	Ring	60	180	36″	—	
7	509	Pin	5	10	1/12	—	
4	526	Relay	200	1000	36″	2 P.	½ P. Surp.
12	590	Rod	V.S.	5	6″		⅛ T. "
6	595	Element	175	700	36″(2)	Bin Top	In Cartons
12	X-600	Link	25	125	⅛	#5 RB.	

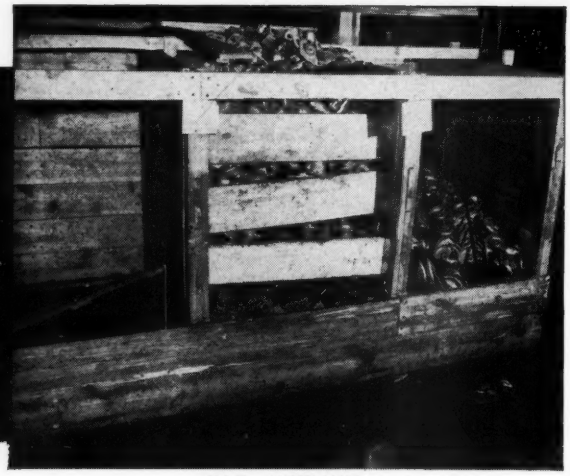
MOVE SHEET. It is used for assigning and maintaining location.

GROUP 11 — SHEET 2 OF 10

TYPE OF PART _____ — DATE 12/6/47.

PART ○ #	Description	OLD LOC. Bin	OLD LOC. Bulk	√	NEW LOC. Bin	NEW LOC. Bulk	Pcs.	Complete
A-87	Housing	1A2	—	√	G1A6	—	4	JT. 12/8
P-101	Plunger	1A3d	—	√	G1B1	—	70	
B-162	Valve	1D4a	—	√	G3B2	G3D3	160	
B-163	Valve	1F2d	—	√	"	—	40	
B-164	Ring	2C2A	#2 Aisle	√	G2a1	H2A	460	
C-200	Assembly	3G7a	Tub 8	√	G2G1	H2B	110	
C-201	Assembly	5G7c	Tub 40	√	G2G2	H2C	131	
X-223	Packing	2A2f	—	√	G2G3		40	

Pittsburgh Cargotainers save $35. per carload handling castings at Westinghouse



OLD METHOD

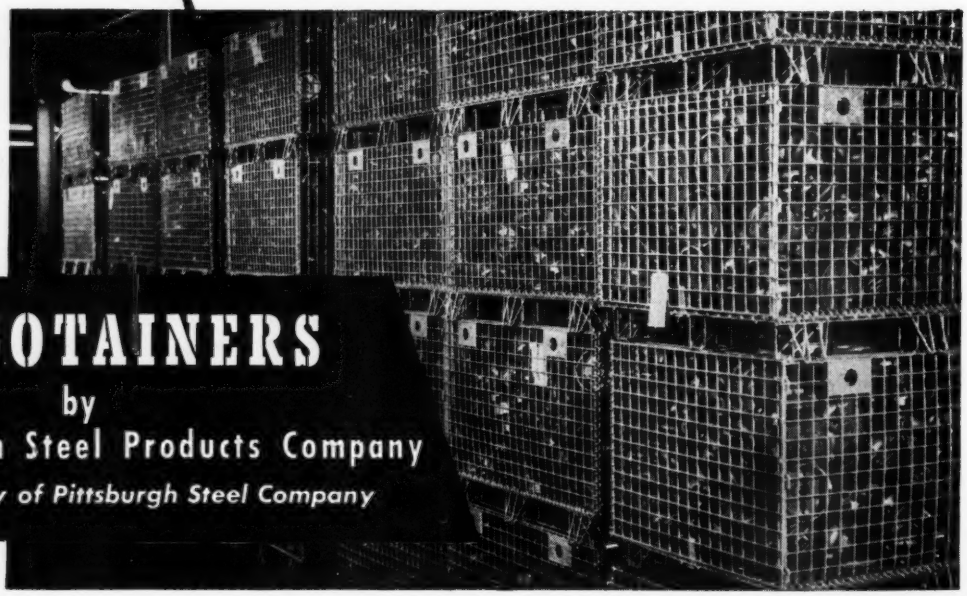
You can save with Cargotainers just as Westinghouse is doing at its Small Motors Division, Lima, Ohio. Formerly, bracket castings were unloaded by hand from railroad freight cars into skidboxes. These were carried to the storeroom by electric truck and unloaded by hand into wooden bins. This took one man 48 hours—it cost $41.00.*

Now the castings are received in collapsible wire Cargotainers. The same electric truck picks up the containers of castings from the freight car and unloads it in only 3½ hours at a cost of merely $6.00—a net savings of $35 per carload. In addition Pittsburgh Cargotainers have made possible several other savings—the old wooden bins are out and castings are now kept in Cargotainers tiered four-high until used—a big savings in floor space. Breakage in the Westinghouse plant has been eliminated as has the demurrage on freight cars. Better inventory and accounting is possible. Work is scheduled without delay. These are all extra savings not included in the $35 saved on handling alone.

If you want to save money on your materials handling, it will pay you to investigate Pittsburgh Cargotainers. Write to Pittsburgh Steel Products Company, 3255 Grant Building, Pittsburgh 30, Pa. for information.

**From "Better Handling Nets Important Savings" Factory Management & Maintenance, February 1948.*

MODERN CARGOTAINER METHOD



CARGOTAINERS

by

Pittsburgh Steel Products Company

Subsidiary of Pittsburgh Steel Company

ing total of parts which had to be made available for the service of units in operation.

Approach to Problem, Its Scope

Engineering, purchases and production data were loosely kept. Steps had been taken to better organize and correlate engineering drawings and bills of material, to improve and to stabilize procurement of purchased items, to develop an accurate history of parts activity, and to convert from a mixed system of vendor and own-part numbers to a single, uniform system. These steps were proving effective for long-range improvement of parts availability, but were not materially relieving the current situation. As a last step, it was decided to search in the service parts stores operation itself for some basis on which to begin remedial action. The preliminary findings were as follows:

1. Of the 11,500 individual parts items sold through the Service Parts Department, some 7000 were used in active production of new units, while some 4500 were carried solely for service.

2. The conventional fan-fold system of processing customer orders through the organization was providing adequate information and sufficient copies to facilitate actual shipment of orders. (An excessive time-lag in converting the customer request to a fanfold order was brought into line during this survey. This was an office problem.)

3. The average daily load of 145 individual orders was not deemed too heavy for either the Order Service Dept. or the personnel of the Stores Dept. to handle.

4. The system of writing an individual ticket for each item of each order seemed at first to be clumsy and expensive. However, several clerical errors were caught in checking them and errors in order selection were exposed and corrected at the checking point. Further examination proved that the fastening of the identification tag either to the part or its container facilitated the task of filling orders. It also permitted the use of inexperienced help.

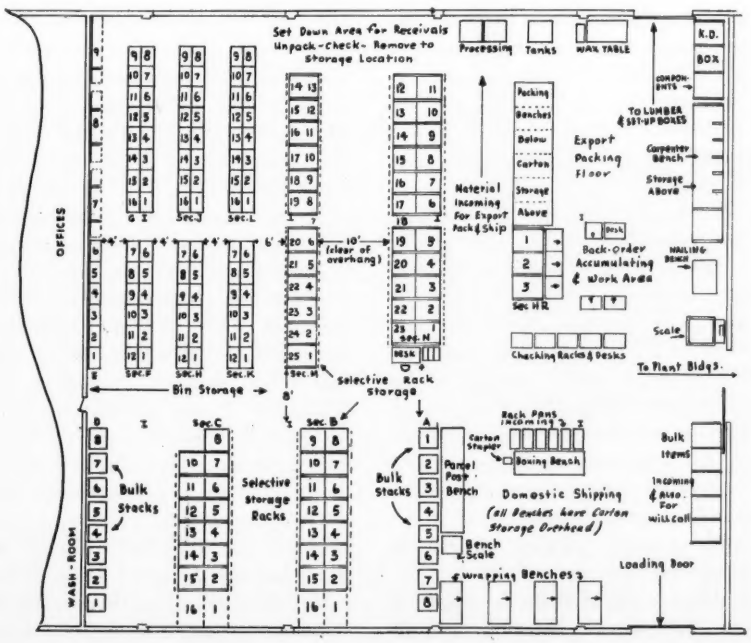
5. The handling of some 40 emergency orders per day was impeded by difficult working conditions, "lost stock," and by the materials "locked in" by other items (stacked in front of or on top of the desired parts).

6. There was continual discrepancy between recorded and actual stock.

7. Fricition between departments concerned in getting out the orders was evident.

8. Continual interference with good service parts operation by shop production, was caused since both types of parts were stored in the same area, serviced by the same general facilities, and controlled by the same supervision.

FLOOR PLAN. It shows revised storeroom with application of warehouse plan type of arrangement. Major areas are identified.



Preliminary Decision

These findings pointed directly to two fundamentals around which corrective action could be centered:

A. The service parts activity should not be subordinated to that of production parts.

B. Institute adequate control of parts, through improvements in the storage system and location records.

Complete segregation of service parts from production parts, including supervision was instituted. A large building was made available for the relocation. Serious consideration was given to setting up a complete stock of current parts within the Service Parts Dept. It was decided to provide only for those parts carried solely for service, and provisions were made for later expansion.

Control Through Proper Layout

It remained then to provide layout and storage facilities which would assure adequate control. The basic requirement of any storage revision, activity of the items to be provided for, was almost complety lacking due to loose record-keeping in the past. In some cases no record was found for many parts actually in stock. As a start, the stores location file was selected. It was transcribed to a work-sheet, item for item (Fig. 1), and, in

turn, cross-checked with the stock-controller's file. The considerable differential, is shown as follows:

1. Of 4500 parts accounts analyzed, only 3800 remained as "legal". The balance was either cross-references to a superseded item, discontinued items, or erroneous listings.

2. All items were stored under incorrect part numbers, resulting from wrong prefix or suffix, erroneous description, numerical similarity or transposition of numerals.

3. 255 items were not stored according to the location file.

4. 339 items were on hand but not recorded on the stock-controller's file, or vice-versa.

By reconciling or correcting these discrepencies, an accurate list of all the parts actually involved in the relocation was secured. (The service of two-full-time engineers for a period of two months was necessary to complete this phase of the program.) Other benefits realized were:

A. Immediate shipment of several thousands of dollars worth of parts which had been lost either physically or in paperwork status.

B. High level of agreement between recorded and actual stock-on-hand was reached.

C. Much of the past inter-departmental friction was eliminated as the inconsistencies disappeared.

With the accurate list of parts available, the next essential was activity and maximum stock expectancy. It was here that past ineffective storeroom operation was largely explained, and the remedy was found.

Lack of knowledge on individual parts status, accelerated by erratic receivals from vendors engendered an unhealthy policy. Parts were stored in the first available openings as soon after receival as possible. Some were exhausted by shipments before they were stored, or tags were lost, causing added delays. Accessible openings became congested with slow-moving parts, causing multiple location of more-active parts. Other drawbacks were not lacking.

Here is the solution developed in an analysis: 1. Develop as accurate an activity as possible for each part. 2. Provide easily accessible and permanent locations for a reasonable quantity of each part to be stocked. 3. Provide permanent bulk storage for the total stock-expectancy over the amount the primary location would accommodate, for each item. 4. Develop a simple system which would classify the status of items received for intelligent future handling.

ROTARY BIN. This photo shows how a 4-section rotary bin can be used in present shelving to increase compartment capacity on small items.

The urgency of the project did not permit either elaborate planning or meticulous attention to detail. In developing the individual activity, it was necessary to study the scanty history of each part with a consensus of future activity. The resulting amount was then weighted by the procurement problem applying to each case to secure individual maximum-stock-condition expectancies. Both activity (over 30 days) and maximum stock authorized were then posted to the work-sheets (Fig. 1).

As the next step, a series of bin and rack openings based on actual parts requirements as to size, shape and storage characteristics were selected. The standard openings, pre-selected by management, did not allow sufficient openings for all items. It was agreed therefore, to provide smaller vertical spacings between shelves for slow-moving parts (Fig. 3), and to the use of rotating inserts, which could be slipped into standard openings in the bins, for the more active parts (Fig. 4). Planning thus made it possible to assign each item to a

specific bin or rack opening. This data too, was posted to the work sheet. At the same time, a note was made of all material on hand in excess of the normal maximum. After permanent assignments of space in the bulk racks was made, this material would be given temporary bulk locations. As one engineer accumulated this information another distributed it to group sheets, formulated planographs, posted the assigned locations to the move sheets and had several multigraphed copies of each printed. These sheets were later used to authorize, control, and follow actual physical transfer of the service stock from the old to the new location.

The Warehouse Plan of Storing

It will be noted that the minimum opening for active parts stored in bins (Fig. 4) was a $\frac{1}{16}$ rotary bin, with a maximum opening (full shelf) of 36″ x 12″ x 24″. In many cases the minimum opening would accommodate the total maximum stock expectancy—often equal to 180 days activity. For the majority of items, it was necessary to determine which size opening would be best. A careful check indicated that the floor-man, who would be responsible for storing receivals and keeping original locations filled, could complete his surveys in from two to three weeks. Therefore, it was determined to provide an original location for a 30-day coverage of each item. Where the largest bin opening would not accommodate this amount, the original location was made in tubs or on pallets which were stored in the bulk racks. The in-between size was cared for by sub-dividing tubs (36″ x 48″ x 18″) into quarters or sixths. In these cases, locations were made in a single-depth rack, making both ends of the tubs or pallets accessible. Primary (original) locations were kept in the lower levels.

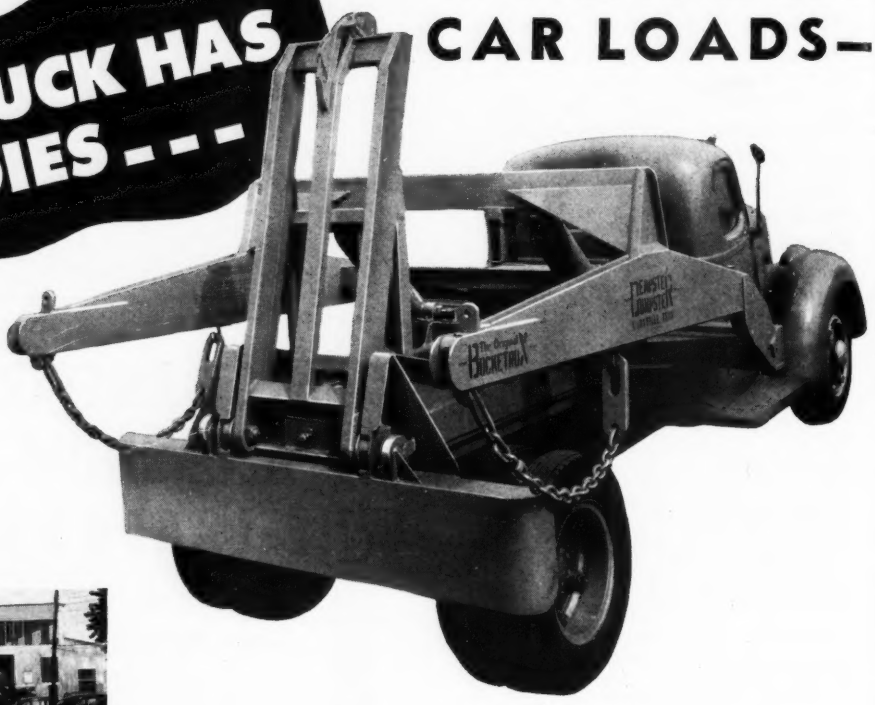
Location Limits Individual Storage

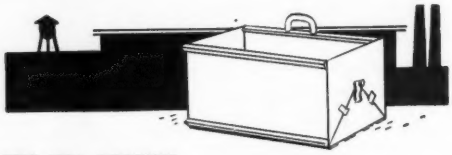
Thus, in the very fact of location assignments, a limitation was

(Turn to page 44)

THIS TRUCK HAS 37 BODIES - - -

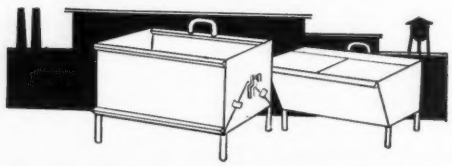
. . . HANDLES CAR LOADS—





FELT MILL DIVISION

Produces 30 cu. yds. of scrap and clean-up per day. Two, 6 cu. yds. Heavy Duty Drop Bottom Bodies are used.



ROOFING MILL AND MACHINE DIVISION

Produces 104-1/2 cu. yds. of tabs, shingle scrap, slate scrap and roofing scrap per day. Seventeen, 5 cu. yds. Drop Bottom Bodies on legs and two, 2 cu. yds. Water-Tight Tilt Type Bodies on legs are used.

Shown at right are 4 standard types of Dempster-Dumpster bodies. Many variations are available to make these bodies meet every materials handling requirement. Sizes range from 1-1/2 to 20 cu. yds. capacities. A Dempster-Dumpster engineering survey, without obligation to you, will doubtless show tremendous savings for your plant. Write or wire us now.

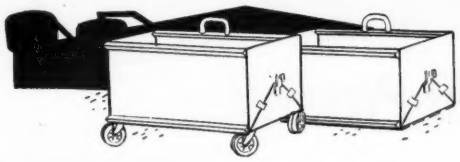
220 CUBIC YARDS—4 RAILROAD CARS OF WASTE AND SCRAP DAILY—

HERE IS A TYPICAL EXAMPLE OF LOW COST DEMPSTER-DUMPSTER MATERIALS HANDLING IN INDUSTRIAL PLANTS. IN THIS CASE, IN A LARGE ROOFING PLANT.

In one of the nation's largest roofing plants, collection and removal of waste and scrap had developed into an expensive problem. Approximately 220 cu. yds. —about 4 railroad car loads—of every type of waste . . . heavy, light, bulky, moist and dry, had to be collected daily from many points in this widespread plant . . . some in driblets, some in large volume. A more flexible, less expensive system of collection was vital.

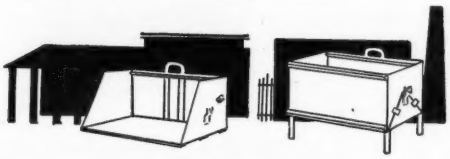
A Dempster Engineering Survey showed how one Dempster-Dumpster Hoisting Unit on truck, serving 37 detachable bodies of various types could collect and dump the plant's entire daily scrap output in only eight hours. As a result of this comprehensive survey, Dempster-Dumpster system was put to work. Spotting the bodies at predetermined accumulation points throughout the plant, the truck hoisting unit and one man, the driver, hydraulically pick up each body as it is filled . . . haul it . . . dump it and return it for reloading (as illustrated at extreme left). The different types of bodies were ordered for most effective materials handled . . . heavy duty bodies for heavy slate scrap . . . light bodies for light bulky felt scrap. Bodies on casters, pushed right up to the machine to receive scrap, eliminated wheelbarrow and hand carrying. At another point bodies are carried in and out of the building by the plant's power driven platform-lift trucks. Scrap collection in this plant is now made on an efficient time-table basis. Savings, over the original cost of handling waste and scrap, have paid for the entire installation in almost 12 months. In many other installations in less time.

Here is how the Dempster-Dumpster System serves all plant sections simultaneously. Replacing an obsolete system of truck-drawn hard wheel trailers, clumsy bins, wheelbarrow handling and hours of useless clean-up time, this installation comprises one truck hoisting unit and 37 bodies in 7 different types. Bodies receive the scrap as it accumulates. When a body is filled, it is picked up by the truck hoisting unit, carried to the disposal area, dumped and returned for refilling. Seven main plant sections are served by the truck hoisting unit, as shown below. Amount of scrap produced and body used is also shown.



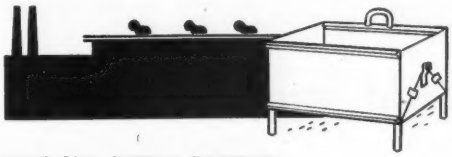
HYDRO-PULPER DIVISION

Produces 28 cu. yds. of scrap per day. One, 6 cu. yds. Heavy Duty Drop Bottom Body and four, 6 cu. yds. Drop Bottom Bodies on casters are used.



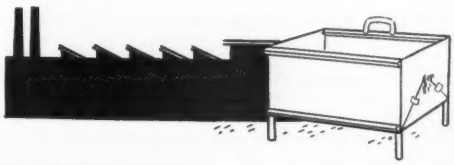
LOADING DOCK AND POWER HOUSE

Produce varying amounts of waste, debris and waste coating in drums. For loading Dock, one 2-1/2 cu. yds. Skip Type Body. For Power House, one, 2-1/2 cu. yds. Drop Bottom Body on legs are used.



PRESS AND CUTTING DIVISION

Produces 24-1/2 cu. yds. of roofing scrap and cuttings per day. Five, 5 cu. yds. Drop Bottom Bodies on legs are used.



DIE CUTTING PLANT

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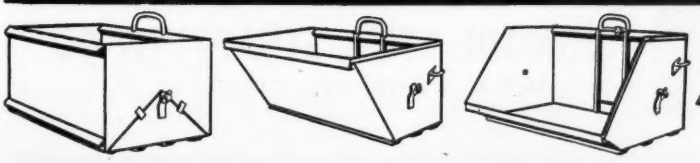

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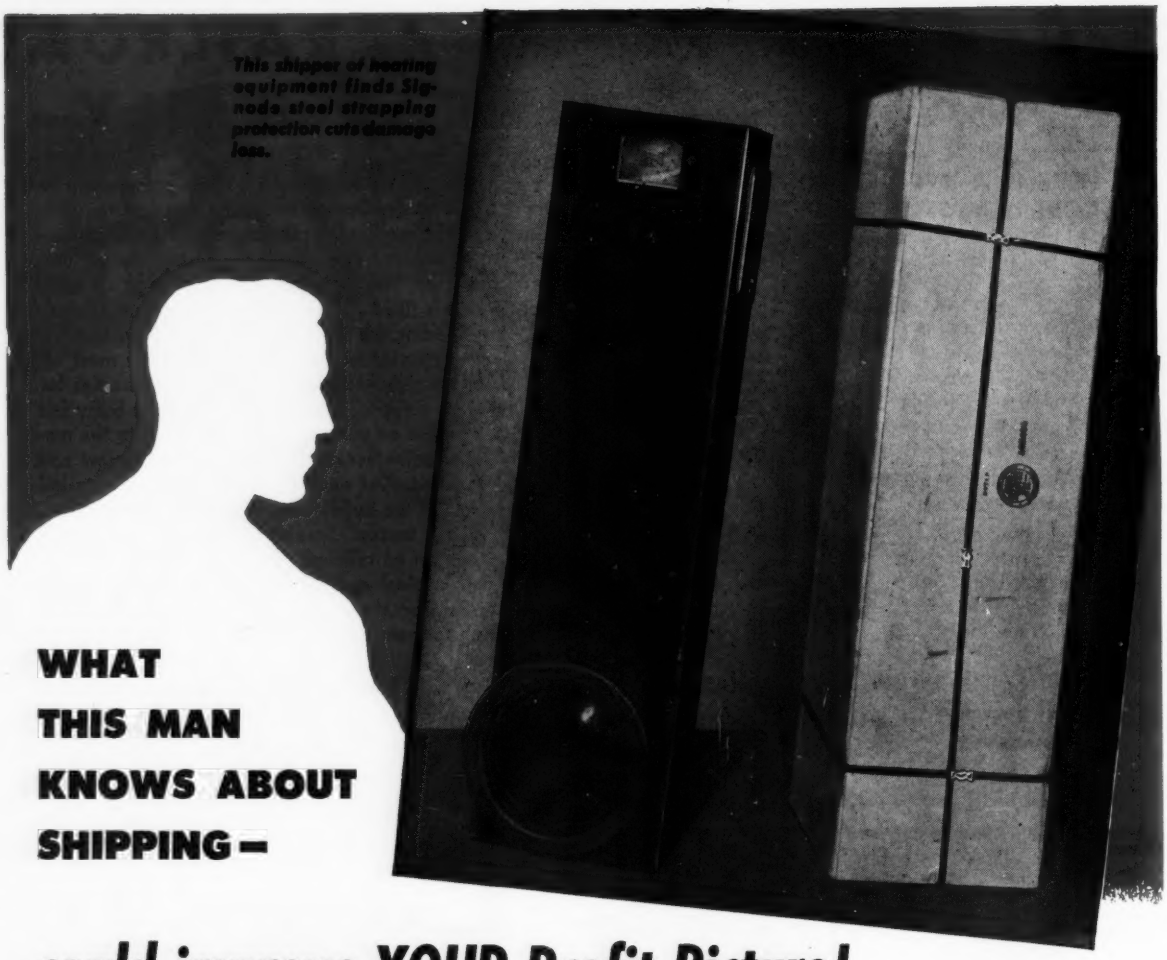

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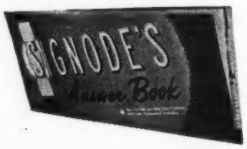

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STEEL STRAPPING PROTECTS YOUR SHIPMENTS AGAINST DAMAGE

Institute Chapter and Association Activities

THE material handling association of Syracuse voted unanimously at a recent meeting to affiliate with the Material Handling Institute as a chapter. They will be known as the Central New York Chapter. A nominating committee and program committee were appointed and it is planned to schedule the next meeting for September, at which time officers will be elected and a constitution adopted.

DON M. WILSON, Sutherland Paper Co., Kalamazoo, Mich. was the principal speaker at the June meeting of the Michigan Division Industrial Packaging Engineers' Association, Detroit. His subject was, "Are We Over-packaging or Are We Under-packaging." The conclusion reached was that many carton users are putting too much cost in their packages because they have not made the proper analysis.

C. A. JOHNSON, in charge of the New Development Branch of International Harvester Co., was featured speaker at the June meeting for 200 members of the newly organized Midwest Material Handling Society, Chicago. Johnson discussed the manner in which International Harvester solved problems confronting them in the layout of their Tennessee plant. The speech covered proper layout of buildings for practical flow of processing operations, the selection of adequate materials handling equipment, and the problem of exposed or enclosed platforms.

Win Part Of $1,500!

The second Flow Cost Analysis Contest offers cash prizes totaling $1,500. Individual awards, amount to $500, $300, $200, and five $100 prizes. Write for your entry blank to FLOW, 1240 Ontario Street, Cleveland 13, Ohio.

Material Handling Brought Down To Earth

By EZRA W. CLARK
Consultant

Excerpts from a speech before the Society of Automotive Engineers and Sugar Technical Engineers

INTERNAL freight handling costs are costs that lurk under the disguise of factory burden or factory overhead. Production management knows that there are many variables in the problem of plant overhead, but we all agree that the elimination of needless and unnecessary items of such expense enables the production manager to raise his efficiency and provide a better product at equal cost or as good a product at lower costs.

Let me illustrate another aspect: the industrial relations phase.

I walk out into the shop and step alongside a machine where an old-timer is puffing and sweating as he takes off and replaces a casting on his drill press.

Engineer: "Good morning Fred. Looks to me like you're working too hard. How come?"

Operator: "Well . . ."

Engineer: "Our company has about $9000 per man invested in machine tools, many like the drill press that you are running, some of them more complicated and more expensive. These machines make the money. They earn your wages, my pay, Uncle Sam's taxes, take care of all expense, and lay a small percentage for profit. But only in the good years."

Operator: "I don't quite understand what you're driving at."

Engineer: "When you are working you are a double expense to the company. The time that you're busy represents $1.59 an hour plus the cost of carrying the expense of your machine tool. You see, when you're busy the machine is idle. It stands to reason, on the other hand, that when you are idle and the machine is busy, the machine is doing the work and earning the money for all hands."

Operator: "Well, I guess that does make sense."

Engineer: "That's why I said you're working too hard. You are an expert mechanic and machine tool operator. Your job is to figure out a series of successive movements that will reduce to a minimum the time that you are lifting, toting, placing, or removing a casting. You must gauge your efficiency by the ratio between the time in an hour that you are working and the time in the same hour that the machine is working. An old hand like you has little scrap, so if you can figure out that you're busy five minutes in the hour it means that the machine is busy 55 minutes and the ratio is 11 to 1 in favor of the machine tool. If you can,

in the time you are resting, figure out a routine by which you only have to work two minutes in the hour and the machine works 58 minutes, the ratio instead of being 11 to 1 becomes 29 to 1. A mighty big difference."

Operator: "I never thought of my work like that before."

Engineer: "Well, let's see how the company has helped you. We bring the rough casting to you on a skid platform by a small fork truck. If your casting weighs more than 20 or 25 pounds, you have an electric hoist alongside your machine that will lift and spot it into place.

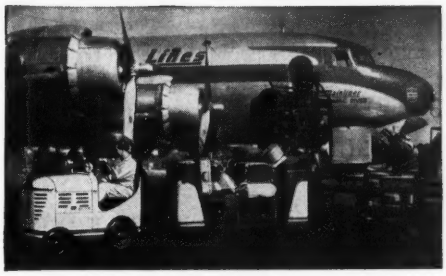
Engineer: "On the other side of your machine, you have a little platform that an electric hand hoist machine runs under and the stock man whisks it away to inspection and storage."

Operator: "I'm beginning to see how all this equipment helps me."

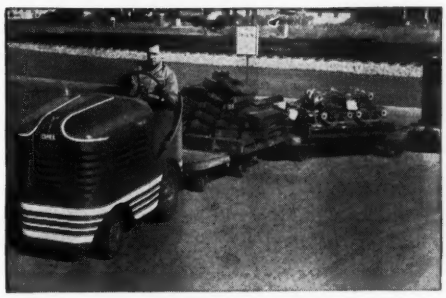
Engineer: "Does the picture become more clear to you? Your drill press is worth about $4000. To keep it busy as much as possible, and to keep you idle as much as possible, the company buys a fork truck for $2500, a power hand truck for $1200 and a chain hoist for $1000. So the company has invested under your direction $8700 worth of machine tools—to the end that you can loaf as much as possible and keep your drill press running to the maximum."

Operator: "Well I'll be darned. The boss tells me I work too hard and then proves it."

MATERIAL HANDLING News



Trailer-loads of luggage, mail and express are hauled swiftly by the Clarkat to a waiting air liner.



On their way to storage a Clarkat hauls trailers loaded with castings, machined parts, drums and miscellaneous items.

Mass handling of palletized units on trailers is an easy, natural job for the Clarkat.

This compact package of pulling power "delivers the goods," *at low cost* The CLARKAT

Thorough, thoughtful analysis of performance records of towing tractors used in Industry leads you inevitably to the husky, nimble Clarkat.

Hauling huge tonnages of material by the trailer-train-load—using its squared nose to bulldoze heavy units into position—handling the numerous heavy-pull jobs common to most busy plants: the Clarkat has made an extraordinary record for efficient and economical performance wherever it has been put in service.

Only an experience like Clark's—30-odd years of resourcefulness in evolving modern materials handling methods and machines—could produce the Clarkat.

Exceedingly important is the exclusive and flexible center-pivoted suspension of the full-width steering axle—a guarantee of smooth, safe travel over rough surfaces. It's easy to handle, easy on the driver, easy to steer.

It is built in two models:

- Clarkat "20"—drawbar pull 2000 pounds, towing capacity 42 tons
- Clarkat "26"—drawbar pull 2600 pounds, towing capacity 58 tons

It is gas-powered, with either solid or pneumatic tires. For still heavier hauling the Clarktor "6" is recommended; built in four models with towing capacities of 47, 68, 90 and 104 tons respectively.

A knowledge of this husky, hustling worker rates high as vital business information. To explore how it will speed up your production with substantial savings, get the objective survey and recommendation of a Clark field representative.

It's always "good business" to CONSULT CLARK.

ON THE  PALLET

NEWS · VIEWS · TRENDS

A NEW PROGRAM, "Materials Handling in Receiving, Warehousing, and Shipping," designed to stress the many advantages of modern material handling equipment and methods, has been announced by the General Electric Co. The program, which is part of G.E.'s More Power to America Program, consists of a 16-mm, all color sound motion picture and a 96-page application manual.

THE FIRST National Mechanical Handling Exhibition and convention of Great Britain was held in London, July 12-21. In connection with a vast array of exhibits, a comprehensive list of papers was presented. The subjects covered mechanical handling in many industries. Discussions on various types of material handling equipment were also given.

DAVID I. PURSLEY, vice president of the Lawrence Pallet Exchange, spoke before The Motor City Traffic Club of Detroit, Forum. His subject was, "Pallet Shipping—A Modern Traffic Problem." His plan would make feasible nationwide pallet shipping and make available the economies inherent in the mechanical loading and unloading of packaged materials.

JOHN M. HANCOCK, Lehman Bros., was chairman of the 25th General Management Conference held in New York. Included among the speakers were, Alvin E. Dodd, president A.M.A., Charles Luckman, president, Lever Bros., General Brehon Somervell, president, Koppers Co., Inc., and Lounsbury Fish, Standard Oil Co. of California.

THE BEMIS PAPER BAG CO. paper bag plant at St. Helens, Oregon, which has been closed during the recent floods, will not be reopened because of flood damage to building and equipment. Instead, Bemis expedited completion of its Vancouver, Washington plant, which was scheduled for operation in July.

THE S. G. TAYLOR CHAIN CO. is celebrating this year its 75th anniversary. The company started operation in Chicago in 1873 and was moved to Hammond, Indiana, its present location, in 1911. Taylor was one of the first to develop alloy steel chain for industrial use, and today the products manufactured include automotive anti-skid chain, pound, and alloy chain.

THE THIRD annual Industrial Packaging and Materials Handling Exposition will be held at the Hotel Sherman, Chicago, from October 5 to 7. General chairman of the exposition will be A. C. McGeath of the American Box Board Co. C. J. Carney, Jr. will be managing director. One of the highlights of the show will be a "short course" on packaging and material handling arranged and conducted under auspices of the University of Illinois.

INAUGURATION of the second class of the Wirebound Institute, industry-wide technical training program sponsored by the Wirebound Box Manufacturers Association for the personnel of its member companies, has been announced. The second nationwide series of "clinics" held for registrants of the first class has just been completed. Present plans are for the first series of the new Institute class to be held simultaneously with the third "clinic" sessions of the original class early next fall.

THE FIRST Western Conference on Packaging, Packing and Shipping will be held concurrently with the First Western Packaging Exposition in San Francisco, August 10-13. The keynote address will be given by J. Lester Perry, president of Columbia Steel Co. The title of his talk, "Is The West Holding Its Industrial Gains." It will be devoted to the economic and industrial growth of the west, and how that commercial and industrial progress has created new horizons and immediate opportunities for the packaging industry as a whole. Over 100 major companies will participate as exhibitors.

WITH THE use of pallets, United Air Lines has speeded up cargo loading on transcontinental Cargoliner flights nearly five times over conventional methods, according to Glyn Johns, the company's superintendent of cargo service equipment and procedure. The pallets used are 30"x36" magnesium metal bases, and are stacked to increase space. In test loadings, it was found that an hour can be saved on the cross-country flights. Johns stated that about 90 per cent of cargo traffic can be palletized.

ISLAND EQUIPMENT CORP. has combined its factories and general offices and is now located at Brewster-Rolls Royce Bldg., 27-01 Bridge Plaza North, Long Island City 1, New York. The company manufactures conveyors of all types and boosters.

How Package Output was Doubled in One Shipping Room

Acme Steelstrap helps Duro Test Corporation reduce breakage, increase production, speed shipping

They make twenty packages now in the same time they formerly made ten—and with no increase in labor cost.

- **There is less breakage**
- **The package is neater**
- **The package is 100% stronger**
- **The shipping department is cleaner**
- **Only half the former floor space is now needed for packaging operations**
- **Shipping is "much faster"**

This is an actual case history from Duro Test Corporation, North Bergen, New Jersey, when they applied Acme methods and Acme Steelstrap to make their packages of fluorescent fixtures "bound to get there."

And there is an excellent chance that an Acme Shipping Specialist can help you, too, improve the efficiency and reduce the cost of your packaging and shipping.

For more information on what Acme Steelstrap can do for you, mail the coupon today—or write direct for help on your specific problem.

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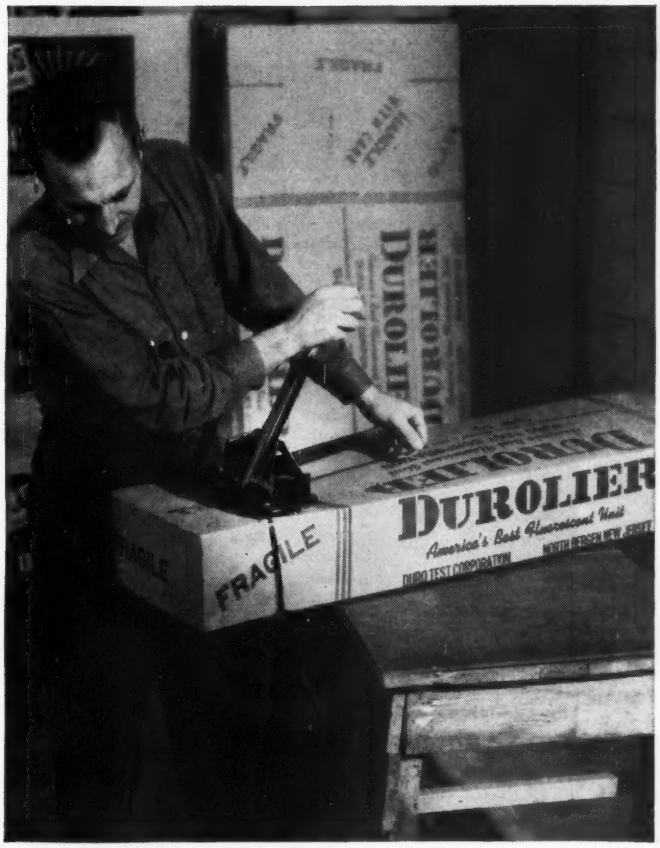

ACME STEELSTRAP made this package neater and 100% stronger than former method.

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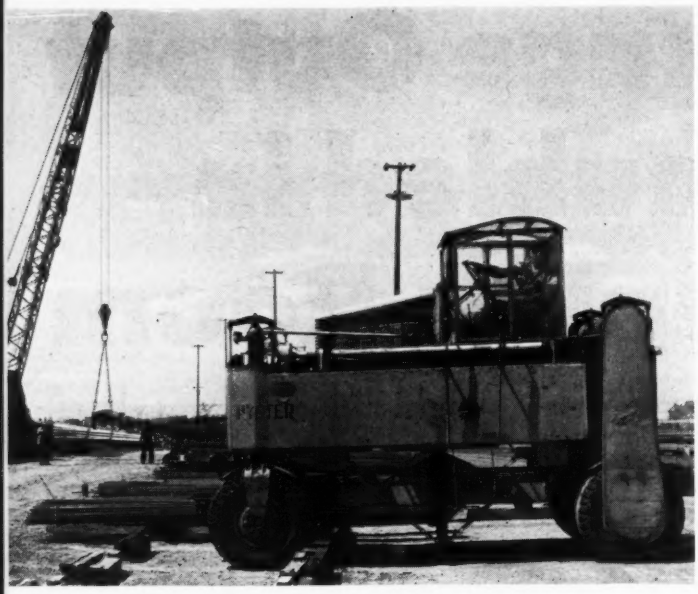


Crane transfers unit loads to storage space. Note woodblocks which absorb shock and protect lightweight bolsters.

Straddle truck roaches for pick te ident

STRADDLE TRUCKS *in a Steel M*

This application of straddle trucks resulted in numerous operating improvements and economies—outside as well as inside the plant buildings.

By FRANK C. WIER
Material Handling Supervisor
Steel and Tube Division
The Timken Roller Bearing Co.,
Canton, Ohio

PART 1

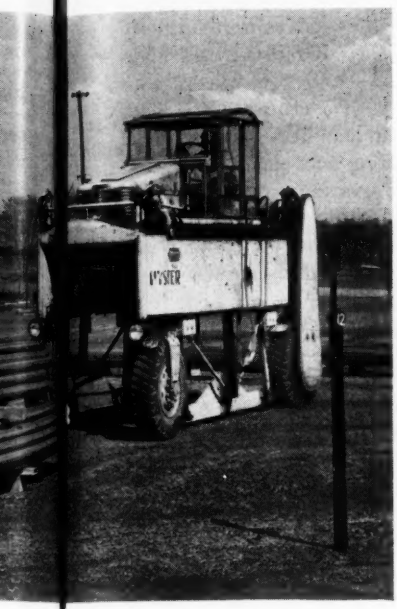
THE particular application discussed here is situated in the Gambrinus Plants of the Steel and Tube Division of the Timken Roller Bearing Company, Canton, Ohio.

The materials processed in these plants consist of rolled bars and mechanical seamless tubing. Fifty per cent is alloy steel required for numerous industrial uses, while the remaining weight goes into bearings.

The layout of the buildings involved in these operations consists of a main group comprising six parallel buildings of considerable length with buildings on each end at right angles. Several other buildings are involved which are located near the boundaries of a 250-acre plant site. Roadways and plant railroad facilities connect all of the units. Problems of material handling arise in this modern plant due to the irregularity of the flow of material. The solution to these problems has been found in the application of straddle trucks, which provide the flexibility required to absorb this irregularity of flow.

Statement of the Problem

Means of supplementing the original handling methods presented a problem because of the size, shape, and weight of the material in question. Bars are received in lengths of 10 to 16 feet, with diameters from 1 inch to 6 inches. Tubing ranges from 14 to 20 feet in length, and from 2 inches to 11 inches in outside diameter.



dle truck oaches load with truck shoes in position for pick te identification tags on each bundle.

el Mill

Laydown space permits planning of crane work in shipping department. Material is moved inside at receiver's request.

All of these materials are put into the form of a bale. Ten thousand pounds (10,000#) is the maximum weight of any bale. Bundling wire, in some cases, and sling chains in others, are used to bind the bales. Each bale has a permanent identification in the form of a number, and other pertinent data such as customer's name, order number, heat number and type of steel. The moving of this material from one building to another to meet the requirements of the various processing operations was formerly done by two general methods: 1. Conventional highway trucks, 2. Standard gauge gondola railroad cars. The movement in a particular building is accomplished mainly by means of overhead bridge cranes.

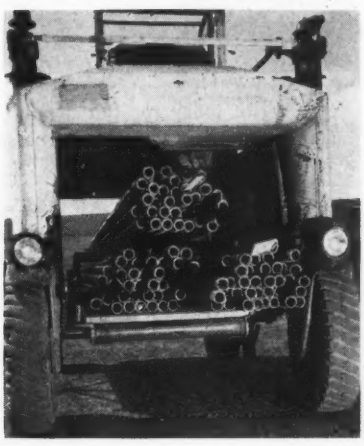
Railroad cars are the traditional method of steel mill movement. Highway trucks have been introduced in recent years to speed up the movement of small quantities of rush material. As war pressures increased and the general demand and rush items became more numerous, highway trucks assumed an increasing proportion of the total load. Whereas a railroad car requires no manpower while it is standing still and waiting to be loaded or unloaded, a truck needs immediate service to avoid costly delays. The increased use of trucks required an abnormal amount of immediate overhead crane service to the detriment of finishing machine operation. Since all railroad cars and trucks were unloaded in the buildings the material last received had to be placed on top of the stock piles.

Long Hauls of Heavy Loads

An enumeration of the various movements is necessary to gain an understanding of the complexity of the problem. They are as follows:

1. **From Canton Plant to Gambrinus Plant—3 miles distant.**
2. **Cross movement within the main group of parallel buildings—75-foot average.**
3. **From Piercing Mill to #2 Finishing Building—1 mile distant.**
4. **Finished material from #2 Finishing Building to the Bearing Factory —1½ miles distant.**
5. **Finished material from Final Inspection in the main group of finishing buildings to the Bearing Factory—½ mile distant.**
6. **Finished material from Final Inspection to Shipping Department—500 feet.**
7. **Scrap tubing from two points in the main group of buildings, and from the Piercing Mill Building, and from #2 Finishing Building to scrap storage yard, each movement covering approximately ½ mile.**
8. **Scrap in boxes consisting of bar and tube ends and turnings, from main group of buildings to storage yard—½ mile distant.**
9. **Miscellaneous movements of material consisting of lumber, chains, forging scrap, oxygen and acetylene tanks, machinery, building materials, etc., to and from various points all over the plant site.**

Shoes on truck pick up bolster by its ears.



All of these moves were formerly accomplished by railroad cars, highway trucks and tow trucks with trailers, with overhead crane loading and unloading. The control of these various movements was exercised by various personnel employed in the several departments, resulting at times in conflict and stagnation of the material flow.

Straddle Trucks Well Coordinated. Bolsters Described

Under the present system, all but the first of these movements are accomplished by straddle trucks. Of the movements now accomplished by straddle trucks, all but one are under the control of our Material Handling Department, interested only in the actual flow of material, and not concerned with any particular operational functions. The one exception is the small straddle truck of 12,000-lb. capacity which is used for cross movement within the main group of six parallel buildings. It handles only one bale at a time.

Large straddle trucks of 30,000-lb. capacity which carry from one to five bales per load are used for all inter-building movements. Since these larger trucks are on outside work on a 24-hour per day basis in all kinds of weather, it was necessary to provide special cabs for the operator's protection. Due to the design of the straddle truck and the nature of the work involved, these cabs had to have full vision, including up and down. There is no bottom in the cab other than that necessary for the driver's feet. This open-bottom construction presents a problem in cab heating which is alleviated by hot water heaters taking air from outside the cab. These provisions have proven satisfactory during cold winter weather. The cab is built of plexiglass with aluminum framework and was fabricated by aircraft engineers.

Loads are lifted by means of bolsters which fit a 60" truck width. These bolsters are of two types—single and double. Two single bolsters are required for a load unit, whereas one double bolster

will accommodate a similar load.

Single bolsters are used to allow manual placement for loading, while the double bolster requires placement by straddle truck for loading. On single bolsters, upright side retainers are not possible, whereas they are an integral part of a double bolster, which permits carrying a load of a greater number of bales. The single bolsters are made of a $\frac{1}{8}$-inch steel plate formed into a box member reinforced on the top by two $1\frac{1}{2}$-inch angles. Six-inch angles, welded to the end of the box member, form the ears by which the bolster is lifted. The double bolsters are made of scrap tubing of welded construction with lifting ears of 6-inch angles. A numbering system is used for load identification purposes on the double bolsters.

Main Benefit of New System

The cost of the bolsters to carry 50 tons of steel is minute as compared to the cost of a railroad car and trackage to carry the same load. The heavy capital investment necessary for handling peak loads in railroad cars makes this method uneconomical. For this reason, enough cars were never available for peak load requirements. Due to the relatively small investment for the bolster method, no difficulty is encountered in adequate provision for handling peak loads at all times.

In a unit package handling system, the control of movements of the carrying units is most important, whether they be lift trucks, straddle trucks, or some other type of vehicle. Undivided responsibility for various functions of the handling system is imperative, rather than the divided responsibility that prevails when each department starts its particular material on its journey to another department, without adequate knowledge of the receiver's ability or provision for handling it upon arrival.

Using straddle trucks under a central control system, a load can be moved from the sender's department, who might want it out of his way, even though the receiver is

not in a position to handle it at that particular time. This is accomplished by having lay-down space sufficient to accommodate the peak amounts of material generated by a processing system subject to great irregularity in the flow of material. We have solved this problem by providing outside storage areas for everything except finished stock. High building costs and uneconomic railroad car storage make outside storage very desirable when the material is not subject to damage from the weather. The capital investment involved in storage space for 50 tons of tube or bar stock in railroad cars is approximately $10,000.00; for storage space in a mill type building the investment is approximately $1,250.00; for outside storage it is approximately $3.50. The investment economy afforded by the outside storage method allows and encourages larger mill rollings, and more flexible production schedules, for better utilization of the machinery and equipment involved in the production of steel mill products.

(The second and concluding part will appear in next month's issue.—Ed.)

STEEL WAREHOUSE

(Continued from page 10)

house close to the storage location. The rail spur being located on the west side of the bay, is directly under the fixed cab of the 15-ton bridge crane. This is a strategic location, since the unloading operations are constantly in full view of the crane operator. His unobstructed view of the application of hooks, slings or grabs makes for a safe as well as speedy operation.

Large sheets are deposited by crane on the stockpiles in the main bay, with the lifts separated by timbers. Since two bridge cranes span this area (both cranes have auxiliary hooks for lighter lifts), shipping and receiving operations can be conducted at the same time.

As indicated, stock destined for the two flanking bays will soon be delivered from the receiving point by fork truck. The east bay is assigned to cold rolled bars and various shapes. This stock is stacked in tiering racks, which will be charged and unloaded by the fork truck.

The racks are four tiers high at present, and will be built higher by means of interlocking stacking guides when required by the growing volume. The stock openings are 12" high and 36" wide. The fork truck operation for this stock will provide both flexibility in bay-to-bay movement as well as use of headroom. Power handling into and out of the racks will also make unnecessary physical exertion and thus contribute to plant safety.

At each rack opening metal frames with acetate windows have been attached to hold specification cards describing the stock. This method facilitates systematic storage, quick location of materials, and accurate order filling.

Material to be shipped from the east bay may be loaded on a highway vehicle at the rack side, and

the truck can leave the building through the driveway located in the longitudinal center of the bay.

The low bay on the west side of the warehouse is allocated to sheet stock of higher grades. This bay is covered by a five-ton bridge crane with a fixed open-type cab. This crane serves both the receiving-storage operations and the shipping department, which is located in the center of this area. The stock is arranged in neat stacks north and south of the shipping area.

Material shipped from the warehouse is controlled by weight. The shipping department is equipped with two scales, a 17,500-pound built-in, floor-type for heavy loads, and a portable platform model for lighter shipments. Before shipment, bar and sheet stock are bundled with 1¼" strap iron. The strapping is done either in the storage area or on the scale. Strapping equipment is carried on a special two-wheel hand truck, shown in a photo. The portability factor contributes to the general flexibility of the entire operation.

Several features stand out in this modern steel warehouse layout and operation, among them: 1. Stock segregation in three bays and an adjacent yard (60,000 square feet), all tied in by a common handling system. 2. Strategic door locations provide maximum accessibility for highway vehicles, with a minimum of indoor travel 3. Flexibility is obtained because material can be brought into building by crane, rail or truck. 4. Speedy handling is assured by two-crane operation for simultaneous receiving - shipping functions. 5. Coordination of fork-truck-crane handling contributes to general efficiency and holds physical tasks to a minimum. 6. Use of such accessories as tierable racks, portable strapping equipment and well-located scales are further aids to rapid and correct order filling, good housekeeping and safety of operations.

The Second Flow Contest is open. Prizes amount to $1500. Write for your entry blanks.

PALLET PROGRAM

(Continued from page 16)

and, as in many other plants, the new equipment had to be adapted to the width of the car dock and the capacities of the various floors in the multi-story building. The object was not only to move material in quantity but also to eliminate physical lifting tasks. The details of the material flow are set forth in the paragraphs that follow.

Practically all raw materials as well as containers arrive by freight car on the 300-foot spur to the west of our receiving building. Like many other plants throughout the country, ours had not been laid out for power handling and hence the car dock was not of sufficient width to permit the convenient maneuvering of loaded power vehicles on it. However we palletize all arriving materials in the cars, having solved this problem by use of a battery of motorized pallet hand trucks. These hand-guided trucks

are particularly suited to the narrow dock because of their extremely short turning radius which permits them to turn within their own length. The powered hand trucks move the pallet loads from the cars to a central pick-off area in the building, whence further movement is by fork truck to storage. If the loads consist of empty cans (wrapped in paper), they are transferred by pallet hand truck to an elevator for movement to the second or third floor. Here again, a fork truck transports the loads to storage. Incidentally, since some of the wood floors on the upper levels have insufficient load capacity to support a 2000-pound fork truck, we use a 1000-pound model in these areas. The other units of our fork truck fleet are of 2000-pound capacity on an 18" load center and with a 90" lift.

Our 2000-pound-capacity units are adequate for all purposes. Because of the headroom clearance in certain storage areas, some pallet loads are not built to the full capac-

ity of the trucks—that is, where this would interfere with full utilization of cubic space. For that reason certain types of materials are stacked to a certain height in order to permit tiering three (or two) high. In this way we take advantage of every foot of space.

Considerable movement is by elevator. The two largest manufacturing facilities are in a four-story and in a five-story tower in order to utilize gravity flow. A fork truck could lose a lot of time waiting to spot its loads, we realized, if it were tied up until an elevator arrived. Hence we made provisions to equip each large elevator with a pallet hand truck. The fork trucks spot their loads in front of the elevators and continue their operations without interruption. The elevator operator uses his truck to transfer the pallet loads on and off the elevator at the various levels. Thus both the on-the-floor and the floor-to-floor operations benefited by the addition of the hand trucks to the elevators.

It has been shown how our motorized pallet hand trucks facilitate operations throughout the plant—from receiving to supplying production. Their maneuverability not only makes them handy load movers on the car dock and in narrow aisles, but their light weight adapts them for use on light loads and in areas not suitable for heavier equipment. One of the photos shows one of these hand-guided trucks supplying empty containers to the start of a packaging line.

Thus all types of materials are moved in quantity and without exertion on the part of the operators involved. In our Glo-Coat manufacturing tower, for example, there is a large rectangular vat with a 4½ foot height from the floor, which is charged with wax that comes in 200-pound bags. To avoid shoveling the material into the vat, the vat is charged with a bag dumper, as shown. The bag is opened and placed upright in the skip. Two hooks, attached to the sides of the

skip, are fastened into the burlap, and the hoisting mechanism is then actuated. As the bag is tilted at the top, the material is discharged while the hooks retain the burlap bag in the skip. In a short time thousands of pounds of wax can thus be charged, with all lifting done by mechanical means.

Within the year the pallet program has been in effect, hard physical handling jobs have been largely eliminated. Improved plant appearance has been another important benefit. Operators released from tedious and tiring manual jobs were transferred to operations requiring higher skills. While no cost figures have as yet been worked up, our conservative estimate is that the per-ton handling cost will ultimately be reduced by at least 33⅓ per cent.

As soon as the last of the refinements have been worked out on our incoming raw material and container handling, we will extend the program to finished goods.

Barber-Greene

Cuts unloading time as much as 90%

Cuts costs in HALF!

A hopper-car unloaded to trucks or to stock pile by one man . . . in forty-five minutes! **This is the proved day-to-day performance of the new B-G 358 Hopper-Car Unloader and 363 Conveyor.**

Model 358 All-Purpose Unloader

MODEL 358 ALL-PURPOSE UNLOADER handles any material. Working over rails or in pits, it unloads a carload in as little as 45 minutes, with no jamming, no delays. Positive non-slip drive, sturdy antifriction bearings, Alemite fittings . . . assure years of dependable service. A perfectly balanced machine, it moves easily by hand, trails at road speeds.

Model 363 Portable Conveyor

MODEL 363 PORTABLE CONVEYOR establishes a new standard of lightweight portability combined with strength and efficiency. Pneumatic-tired wheels swivel for radial stock-piling; self-cleaning hopper end with removable cover and hopper plates assures longer belt life; antifriction bearings and belt idlers provide smooth operation. 24" belt; lengths, 25', 30', and 35'.

Send for literature! Address Barber-Greene Company, Aurora, Illinois.

104A

Barber-Greene

Constant Flow Equipment

SAVES

"Saves $600 a year in shipping room," say users of Marsh Stencil Machines, Brushes, Inks! WPB, railroads, truckers recommend stenciling. Three sizes to meet Gov't Spec., 1", 3/4", 1/2". For sample stencil, Shippers' handbook prices, pin this to business letterhead, with your name.

MARSH STENCIL MACHINE CO.
67 Marsh Bldg., Belleville, Ill., U. S. A.

MARSH
STENCIL MARKING

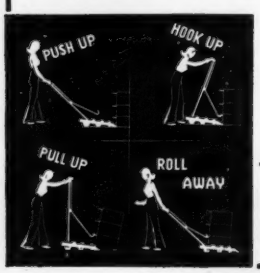
CAST

"George"

FOR THE "HEAVY" ROLE

"George," the almost automatic tote box truck easily absorbs the lifts and strains so dangerous to human muscles. Simple to operate. A twist of the handle-bars engages hook in box handle. Pull-back of truck handle glides load onto upper set of rollers. Truck rides to destination on lower rollers easily . . . with little effort. "George" is all metal, painted brilliantly for visibility, safety.

WRITE FOR BULLETIN F



ROLOCK INCORPORATED
FAIRFIELD, CONNECTICUT

9RG48

with PLASTIC ROCK!

Trowel, a smooth, tough, malleable surfacing right over your old concrete or wood floor

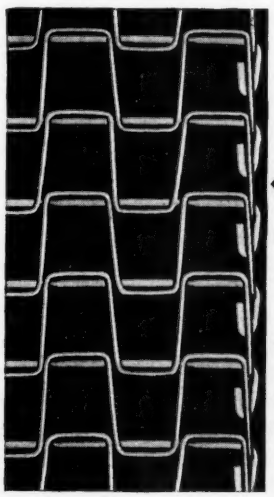
Platsic Rock comes complete, packed in barrels, nothing more to buy, no application "formula" to confuse you. Simply mix and trowel right over old floors; sticks to concrete, wood, steel, average depth ½", patches concrete to perfect feather edge. Old floor Saturday, new floor Monday, hundreds of tons rolling on steel wheels only improve it, 7-year-old floors show no wear. Plastic Rock is spark-proof, skid-safe even when wet, dustless, silent, feels like cork under foot, cannot splinter, crack, crumble, curl or loosen. Used by largest industries and railroads in America. Your contractor or your own crew can apply. Not for home use.

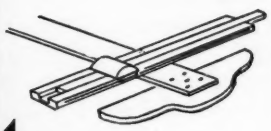
Ask for Report 220-F-8

UNITED LABORATORIES, INC.
16809 EUCLID AVENUE • CLEVELAND 12, OHIO
In Canada—STORRAR MFG. COMPANY, Weston, Ontario
Representatives everywhere, including foreign countries

Cyclone Metal Conveyor Belts

...designed for your operations





Cyclone Flat Wire Belt is made in U-S-S Stainless Steel, galvanized or plain, uncoated wire... 3 mesh sizes... variety of widths.

Cyclone Belts are also available in Chain-Link and Flex-Grid styles.

Cyclone engineers will design a metal conveyor belt to fit your particular needs.

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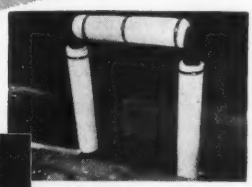
FREE CATALOG No. 4

CYCLONE FENCE DIVISION
(AMERICAN STEEL & WIRE COMPANY)
DEPT. A-88, WAUKEGAN, ILLINOIS
UNITED STATES STEEL EXPORT CO., NEW YORK

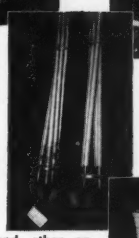
USS
UNITED STATES STEEL

STEELBINDER

...took these strapping jobs out of the problem class!



BRAKE SHOES bound on pallets with ¾" Steelbinder Steel Strapping save vital space in the car and in the storage room, and speed up loading and unloading.



SHOVELS now trimly bound with Steelbinder steel strap have stopped shipping losses suffered when old rope ties were used.

ASBESTOS insulation on these pipes is a "natural" for the Steelbinder. Special stainless steel, monel, copperclad or brass strapping available for such applications.

STOVES and other enamel surface products are protected against chipping and scuffing by soft-surfaced FIBER-and-STEEL strap applied with the Steelbinder tool.

THE versatility of the Steelbinder Tool and the unequalled variety of sizes and types of strapping this one tool handles may well be the answer you are seeking to your strapping problems. An A. J. Gerrard Strap Man will be glad to help you. Look him up now in your local classified phone directory.

The Versatile STEELBINDER

The *only* strapping tool that ties any size or shape object with four sizes of strap. It does the whole job—you don't need a special tool.

Mail this coupon!

A

Send free...

☐ Send free, Steelbinder and Bulkbinder folders
☐ Our packing problem is (name of "problem" product)

We'd like to be shown how Steelbinder works on both product and plant maintenance strapping.

Company_____
Address_____
Attention of_____

ONE-UNIT Strapping Outfit, everything you need to tie a tighter tie on anything you ship, store or repair. Ask about it!

482

A. J. Gerrard & Co.
221-A N. LASALLE ST., CHICAGO 1, ILL.

News From The Sales Field

THE Ohio Equipment Co., Cleveland: this company has been appointed national distributors for the Widgit Electro-Car, manufactured by the Beall Mfg. Co., Cleveland. The "Widgit" is a new electric transportation unit that is designed for fast intra-plant transportation.

STEUBING ENGINEERING ASSOCIATES; This firm has been named by Mercury Mfg. Co., Chicago, as representative in Cincinnati area.

HENRY A. DIMICK and Charles B. Mountcastle have been appointed distributors of the Transitier Lift Truck in Northeastern Ohio. The new company will be known as Transitier of Cleveland.

SPARE PARTS

(Continued from page 23)

placed on the area to be occupied by each item. Where a part required bulk space in addition to bin-opening, it was permanently assigned and so indicated on the location-file card. Where stock-on-hand exceeded the maximum indicated by the survey, that material was given a surplus location which was indicated by placing a blue-colored location card in the file immediately behind the regular white card. Such locations were expendable when materials occupying them were exhausted, and reverted to an open status.

This layout provided:

1. A relatively permanent location for the total authorized stock of all items.

2. Surges of surplus-to-normal stocks (due to procurement problems, poor ordering, poor scheduling, or any other factor) were spotlighted, since no specific storage location was provided for them. Thus reasons behind each such case were brought to light for corrective action. As soon as storeroom supervision was satisfied as to stock-status in these cases, the material was assigned to surplus openings under blue card control.

3. New items were provided for by allocating as surplus, approximately 30% of the openings throughout the size range, strategically around the storage system. Axiomatically, when available sur-

plus openings approached a low level, the stores supervisor could present factual evidence to management in requesting relief.

To insure that the system of control thus made possible was properly initiated and continued in use, all decision remained with the engineers-in-charge until the storeroom personnel were able to use the system to full advantage.

Relocation of Storeroom

The relocation of the storeroom was more easily accomplished. Inexperienced help was used in the main, with one "old-timer" on hand for supervision. Fourteen new bin-sections had been added to that type of storage and all bulk racks were newly built. The group of inactive parts were selected and moved to locations in the new bins and racks. Other groups followed "in toto". As the bins were emptied at the old location, they were moved and set to position at the new location. There was no guesswork since the move sheets (Fig. 6) listed both old and new positions. New file-cards had been pretyped from these sheets and accompanied them when released to the movers. As an old location was deleted, the old file-card was noted. At the new site, the fresh file card was placed in the new file when the part was in place. Bulk stock moved at the convenience of the total move, generally accompanying the group to which it belonged. To insure that all pieces were consolidated, repackaging was necessary, and inventory of the bulk stock was performed at the old location. It was a simple matter to pick up the prepared unit of stock with a fork-lift truck and "take it home." Personnel remained at the old storeroom site until over one-quarter of the active items had been relocated. Then a gradual re-stationing began which was completed with transfer of the last group of parts.

On completion of the program, a recap was made of the storge occupancy:

Bin-Storage Area	3.750	cu. ft.
Bin-top-storage	1,650	" "
Access aisles	5,400	" "
	10,800	cu.ft.
Normal stock-active items	72%	
Surplus " " "	10%	
Dormant & Slow-moving "	18%	
Bulk Storage (Racks & Stacks)		
	11,900	cu. ft.
Access Aisles	13,200	" "
	25,100	cu.ft.
Normal Stock-Active Items	45%	
Surplus Stock-Active Items	29%	
Slow-moving Items	22%	
Departmental Supplies	4%	

These figures indicated that steps should be taken to dispose of considerable slow-moving material, much of which had been obsolete. While careful to retain a quantity of each part which might be called for, the quantities of such material were reduced and some were scrapped.

These changes resulted in the following improvements:

1. Backorders (where the ledger showed available stock) were virtually eliminated.

2. Emergency orders of available stock were cleared at once.

3. Date of shipment behind date of customer request (except where necessary to back-order) was reduced from 14 days to six with the trend indicating that the goal of one day's lapse would be reached.

4. The overall margin of errors was materially reduced. This was obtained since one man, with part-time assistance, was able to store all receivals and replenish all stock locations. It was further possible for one man to handle all inventory and count requests in addition to handling ledger liaison.

5. Stock-pickers (according to their own statements) increased their output by 50% without added effort.

6. Total personnel was reduced from 31 to 24 without constricting efficiency. Furthermore, billings increased nearly 10% over the previous monthly average during the two months following the relocation.

PACKAGING MECHANICS SECTION

A regular monthly section in which are presented solutions to the problems of efficient filling and handling the boxes, cartons, bags, bottles, cases, etc., used in commerce and industry.

CONTENTS

Packing Granite - - - *for gizzards*

If you fill an abrasive product, here's an idea. Granite grit is shipped safely in paper bags. Bag failures were eliminated by the application of common-sense methods.

PACKAGING MECHANICS SECTION

FROM granite to gizzard—that's an abbreviated description of the flow of grit from manufacturer to ultimate consumer. (The grit, lodged in the gizzard of poultry, performs the function of teeth by assisting in digestion.) One of the popular types of grit is that manufactured from granite, whose bright surfaces attract the birds, and thus encourage consumption.

DUMP TRUCK of 15-ton capacity is shown loading apron conveyor in crushing department. Boulders soon become grit.

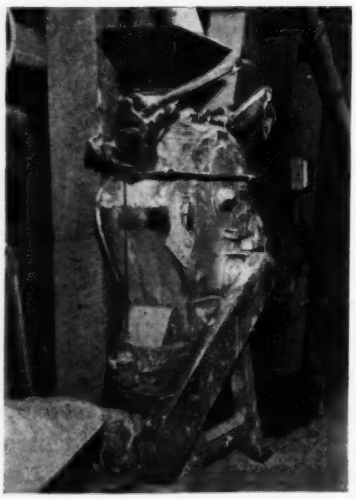
The manufacture and distribution of this poultry-raising aid is the business of the Stone Mountain Grit Co. of Lithonia, Georgia. A variety of handling and packaging equipment is required for the reduction of boulders of granite into minute particles and for preparation for shipping of the finished product.

Before Boulders Can Be Packaged

The granite is quarried from a deposit adjacent to the processing plant. The blasting produces layers for handling by crawler-mounted shovels. Pieces too large for the shovel are reduced by a "nut cracker" ball-attachment operated by crawler crane. Four-wheel drive dump trucks of 15-ton capacity transport the material to the crusher. The dumped granite drops through a hopper to a heavy-duty apron conveyor, which feeds the first of three crushers (see illustration). The material is here converted from slabs weighing up to one ton each to a granular state. It then passes over a number of sizing screens, where it is segregated into five sizes of grit. Sand, a by-product, is separated. About 45 percent of the input is given off as sand.

Valve Type Bags, Pallet Handling

In this plant it was found that the most economical storage method was to keep the bank in hopper storage and package and ship according to orders received. To provide the necessary cushion, an extensive hopper storage system was provided with a capacity of 400 carloads of material.



VALVE-TYPE BAG is being filled with grit. Machine is fed from hopper by tubular chute.

Eighty and 25-pound capacity valve-type paper bags are used in the packaging department. Since the bulk of the shipments are in 80-pound bags, seven valve bag filling machines are used, and one 25-pound filler. The material is fed from the storage hoppers to the bag filling machine hopper in two ways: 1. By means of direct tubular chutes. 2. By belt conveyors located beneath the storage hopper.

FORK TRUCKS deliver loaded pallets. Four stacks of six bags high are tied together. A smaller bag and use of wood shavings solved a serious damage loss problem.

The operator slips the valve end of the empty bag over the machine loading spout and pulls the control lever. An auger feed within each spout forces a predetermined volume into the bag. The operator then closes the loaded bag, and places it on a 30" x 36" double faced pallet. These pallets hold 25 of the 80-pound bags. The completed loads are transported to the boxcars by powered fork trucks. Each fork truck operator serves two bag fillers, supplying empty pallets and delivering loaded ones to the cars, as shown.

Solving a Problem

Because of the sharp knifelike edges of the grit, a number of packaging problems arose with the use of paper containers. The earlier use of 100-pound, five-ply bags resulted in considerable damage in ship-

ment and subsequent handling. By adopting an 80-pound, four-ply bag, this problem was eliminated and the unit container cost was reduced. Another problem arose. This was the shifting of the load in the boxcars, causing bag failures.

The damage was due in part to the sharpness of the grit, and in part of the worn condition of most of the car floors. The problem was met by spreading a two-inch layer of wood shavings on the floor and covering it with sheets of kraft paper, as shown. The use of the above methods resulted in the virtual elimination of damage in transit.

HURRY—FLOW'S second cost analysis contest closes Nov. 15. Eight prizes totaling $1500 are offered. First prize is $500. Write for your blank today.

COMPLEX PACKAGE -- *High-Volume Production*

High-speed packaging of Phillips Milk of Magnesia in the new plant of Sterling Drug, Inc. Engineered methods simplify operations on a complex package.

THROUGH the use of fully automatic packing machinery and engineered production methods, the Chas. H. Phillips Co. Division of Sterling Drug Inc., is enabled to package a relatively complex container at the rate of 125 per minute with 12 operators. The company has only recently constructed and put into operation in Gulfport, Miss., a 72,000 square foot plant for the manufacture of its Phillips Milk of Magnesia products.

To minimize handling, the majority of the floor area is on ground level, with a partial second floor housing the processing department and laboratories. The first processing operation, however, is located on the first floor to avoid multi-story handling of the bagged raw materials. In this operation, the salts are placed into tanks where they go into solution, and the subsequent movement to the Manufacturing Department is accomplished by means of pumps. The bagged material is handled and stored on pallets. When needed, an entire pallet load is deposited by fork truck on an elevated platform adjacent to the mixing tank. Receiving, warehousing, packaging and shipping are all located on the first floor and the movement and storage of all dry materials is on pallets by either powered or hand fork truck.

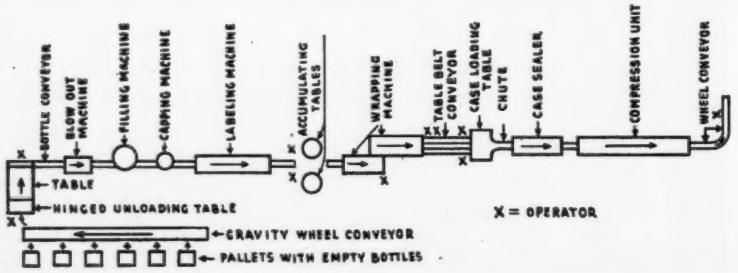
Methods Designed for Maximum Production

Phillips Milk of Magnesia is packaged in two ways, tablet and liquid form. The majority is liquid, which is filled in 4, 12, or 26-ounce bottles. A description of the bottling of the 12-ounce size will typify the rest.

The empty bottles are received in corrugated reshipping cases, two dozen to the carton with each of the bottles protected by separators. To permit use as a reshipper, the corrugated case is purchased with the bottom flaps unsealed so that the removal of the bottles will not damage the case. As they are received, the cases are loaded on double faced pallets and stored to the warehouse ceiling. Forty-eight cases are handled at one time on the 32" x 48" pallets. As they are needed, the pallet loads are destacked and delivered to the packaging line. In order to prevent tying up a fork truck full-time for the job, a zone storage space is provided adjacent to the line which has a capacity of six pallet loads.

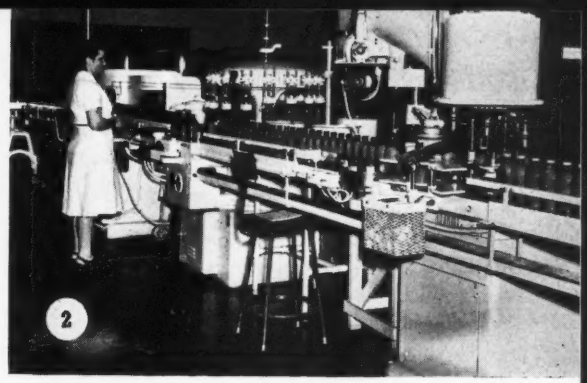
The individual cases are placed on a 20-foot-long gravity wheel conveyor which delivers to the beginning of the line. (A sketch shows the work stations along the packaging line.) The unloader operator removes the arriving case from the conveyor and opens the unsealed end as he places it against a hinged section of the unloading table. This hinged section normally rests at a 75-degree angle to the table top. The operator places the full case against the tilted section and flips it over. In this position, the hinged section is on the same plane as the table. Unloading of the bottles is accomplished by sliding the case on its rigid section, and lifting the case. The empty corrugated container is stacked on a pallet for movement to the other end of the line, where it is refilled with full bottles. Across from the case unloader, an inspector checks each bottle as it is transferred to the bottle conveyor.

LAYOUT PROVIDES continuous flow of material in one long straight line, on one floor.



Automatic Filling Machines

The first of the fully automatic machines on the line is a rotary-type blow-out machine, which inverts and blows out the inside of each bottle with 50 lbs. of air pressure. This is a 16-stem machine that automatically removes and replaces the bottles from the connecting conveyors. The containers then pass to the filling machine via another chain. This machine receives its material from storage tanks in the second floor processing depart-



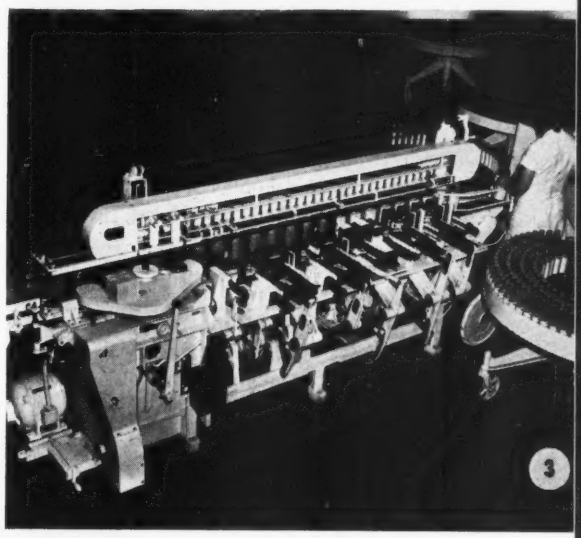
1. HINGED SECTION of unloading table permits gentle case unloading of 24 bottles at a time.

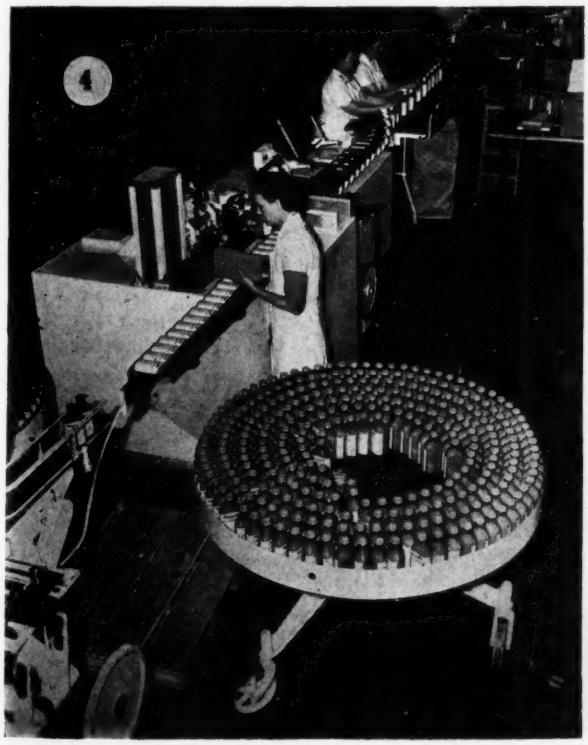
2. AUTOMATIC BOTTLE BLOW-OUT, filling and capping machines process 125 bottles per minute.

3. LABLING MACHINE spots, glues, lables and wipes the bottles two at a time. Note lateral rams.

4. AUTOMATIC WRAPPING MACHINE applies inner wrap, descriptive folder and outer wrap to bottles.

5. TWENTY-FOUR BOTTLES are loaded per case and fed into top sealer and compression unit.





ment by way of suitable pipe lines.

To provide the necessary speed to fill 125 bottles per minute, a 16-stem vacuum filler is used. At this point another inspector watches the first three automatic machines. She stops the line should a jam occur.

From the filler, the bottles pass to a four-spindle capper. Here the screw type caps are spun on as the bottles are securely held by chucks on the rotary head. To reduce the amount of attention required in keeping the capping machine hopper filled, an oversized hopper was installed capable of holding an entire case of caps. These three machines are shown in the accompanying photos.

Label application is also fully automatic. A duplex-type machine is used, which affixes the labels to two bottles simultaneously as they travel by in a vertical position on a chain conveyor. As the bottles enter the machine they are spaced by a pair of spotters and held by a compression unit which exerts pressure from above. One of the photos shows the operation being performed in duplicate by a series of lateral rams. The first two place glue on the side of the bottles; the second set deposits a label on each; and the third set has roller-type wipers that smooth down the ends of the labels.

Two operators are stationed at the discharge end of this machine. They either transfer the bottles to the wrapping machine or place them on caster-mounted accumulating tables shown which hold 450 units each. Normally the production passes directly to the wrapper, but the tables are available to take overages. When a bottle is transferred from the labeler to the wrapper, the position is changed from vertical to the horizontal.

Wrapping Detail, and Packing

The wrapping machine automatically covers the bottles with a corrugated paper inner wrap, folds and inserts a descriptive folder, and then wraps the entire package with a blue outer wrap, as shown. To accomplish this, the inner wrap, the descriptive folder, and the outer wrap are combined and then wrapped around the bottle as a unit. The wrapped unit (with its application of adhesive) passes beneath a heat unit to speed the setting time. Glue is also applied to each of the ends. However, because of the irregular contour of the top of the bottle, only the bottom end is automatically formed and tucked. The top is secured manually after the units are discharged onto a table belt in a vertical position. This repositioning is accomplished by a set of flared guides on the end of the wrapper.

The completed units then pass down the belt to the case loaders, who place them into the shipping containers, two at a time. Each package is loaded into the case in an upside down position, and a corru-

gated paper pad is added. As the cases are loaded, they are slid onto a chute, which feeds the automatic case sealer. The sealing is done in the automatic top sealer and attached compression unit that are also shown.

As the completed cases are discharged from the compression unit, they travel down a gravity wheel conveyor to the final station, where the cases are loaded on pallets. The operator loads 48 cases per pallet, and also codes and date stamps each case. From this point, the material is moved and stored by fork trucks, which later run the loads to the outgoing carrier.

Thus, a relatively complex package is prepared with a remarkable degree of simplicity. It will have been noted that specially engineered production methods contribute importantly to this end.

For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13, or use postcard bound into this issue.

TILE TRUCK

NP1—Wayne Dameron & Associates has developed a truck especially designed for handling tile. This model

has pneumatic tired wheels, all electric welded frame of tee iron, 36" x 96" oak deck, and fifth wheel construction of heavy steel plate. The truck will accommodate 86 size 6" x 3" tile, permitting them to ride with the weight off the bell end, according to the manufacturer. It may be propelled by hand or industrial tractor, and is equipped with semi-automatic jeep hitch for pulling more than one trailer in a train.

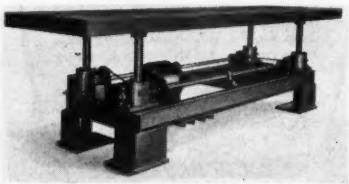
TRAVEL JACK

NP2—The Winkleman Co. announces the Travel Jack, a jack equipped with roller bearing wheels, designed for transporting heavy material with ease of maneuverability. A pair of these

jacks can handle loads up to 2000 lbs. According to the release, the toggle arrangement applies an even distribution of power throughout. The jack is 12" high, 6½" wide, and a pair weigh 15 lbs. A stroke of 34 inches on the handle raises the load one inch off the floor.

STACK LIFTER

NP3—An automatic stack lifter designed for simplified shearing of sheet metal has been developed by The

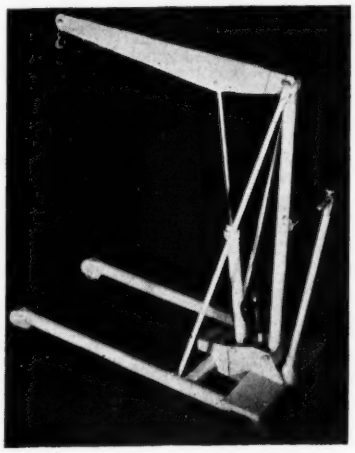


Hamilton Tool Co. Placed next to the shearing machine, the lifter receives the metal and provides a constant height while feeding the machine. The bed of the lifter is controlled with a five H.P. high torque motor. Maximum stop

height is 35", minimum height 26". Table is 36"x124". A continuous lift rate device is available.

PORTABLE CRANE

NP4—A portable crane designed for use in warehouses, garages, and factories is being produced by Manzel Inc. It has two rear casters and two large-



diameter wheels mounted on the frame. The handle acts as a steering shaft and pumping lever. Equipped with supporting braces, booms of various lengths and styles can be used depending on the load. Capacity is one ton.

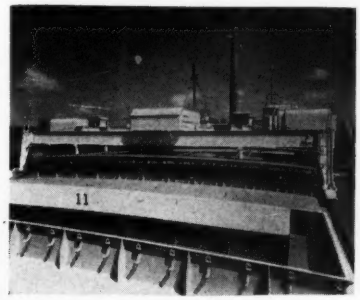
PALLET TIERING POSTS

NP5—The Monroe Auto Equipment Co. is now offering two types of tiering posts to be used in connection with its 8-way steel pallets. The posts are of strong tubular steel construction, and in combination with the non-corrosive pallets are designed for temporary or

permanent shelving. The upper pallet in the tier rests firmly on the plate, while, with the knob type, the end of the post fits into the holes on the upper pallet.

HATCH COVER GANTRY CRANE

NP6—The development of a self-

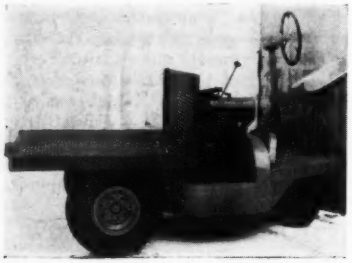


powered hatch cover gantry crane is announced by The Euclid Crane & Hoist Co. and the American Ship Building Co. It is designed for removing and replacing hatch covers of ore ships, and requires no modification of existing electric power set-up on the vessels. It is especially useful during winter lay-up periods when the ship's power is unavailable. The crane, which has a 46' span, is equipped with a Diesel driven D.C. generator, which furnishes power to the two crane motors. Crane travel is by cable drive from a motor operated drum located on the crane.

POWERED WHEELBARROW

NP7—A powered wheelbarrow, the Scoot-Crete, designed for hauling and dumping operations, has been introduced by the Getman Bros. Co. It is said to operate equally well on soft ground

and hard surfaces. It can receive concrete from most mixers without pit



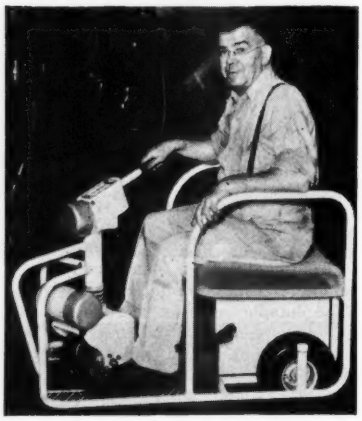
or platform, according to the company. Pouring operations are controlled from the driver's seat. Rear-wheel steering enables the machine to turn in a 6½-foot circle and it has a capacity of 3000 lbs.

HAND DUMP TRUCK

NP8—A hand dump truck made by the Palmer-Shile Co. is now available for general use. The truck is designed to catch turnings from screw machines, holding scrap, etc. Constructed of heavy sheet steel, it is reinforced with a flange along the top edge. The top measures 23¾" x 45", the bottom, 25¾" x 27". The depth is 7½" with an overall height of 23"; weight, 125 lbs. Capacity is about ½ cubic yard.

ELECTRIC CAR

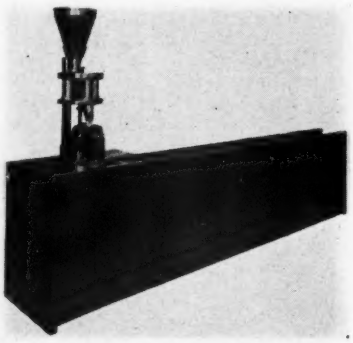
NP9—This car, named Widgit, is designed for employees whose work requires speedy transportation within a plant. The electrically powered unit is manufactured by the Beall Mfg. Co. Controls are centralized in the tiller,



permitting one-hand operation. With a top speed of 15 miles per hour, it can be turned around in a 43-inch circle. It is powered by two six-volt automotive batteries, good for 20 miles before recharging. Recharging is done by plugging the unit into a light socket.

FILLING MACHINE

NP10—Designed for handling bulk and flowing material, a filling machine, the Spee-dee, which is available from the Paul L. Karstrom Co. Electrically operated, it accurately weighs and measures the predetermined amount and fills through hopper agitation. It is further stated that it comes with a ⅓ or ¼ H.P. motor, with the drive mechanism enclosed. It is also equipped with tele-



scopic adjustments and self-aligning plates. The filling machine may be used in conjunction with the Spee-dee conveyor which is also pictured.

HAND TRUCK

NP11—An aluminum alloy frame hand truck, the Unit Freighter, is being manufactured by the Unit Mfg. Co. Weighing 51 lbs., it is 52"x18" with a rated capacity of 1000 lbs. According to the release, it has I-beam interlocked construction, cast aluminum wheels with oversize ball bearings with built-in grease seals, and formed heavy-gauge steel nose.

V-BELT

NP12—A new Ray-Man V-Belt has been introduced by the Manhattan Rubber Division of Raybestos-Manhattan, Inc. According to the manufacturer, the engineered strength members have been especially designed for rugged type of service, and added features are oil, heat and static resistance.

INDUSTRIAL ENAMEL

NP13—Oil-Dri industrial heavy-duty enamel, quick-drying, weather-proofing, is being manufactured by the Oil-Dri Corp. of America. It is designed for use on walls, floors, trim, stairways, ramps, handrails, machinery and equipment. The enamel is said to completely seal and waterproof the surface it covers. It is further stated that it stands up well under severe foot or vehicle traffic or under heavy machine operation.

HERE'S THE SKYHOOK – AT WORK

A SKYHOOK used to be a figure of speech, but now it is a member of the material handling equipment field. It does many of the things which are normally thought impossible. The Skyhook can be used for unloading ships and barges which stand off shore and where there are no dockage facilities. It can be used for logging operations in dense forests without the necessity of laying down the usual corduroy roads. Because of positive traction, it is able to climb any grade in any weather.

The Skyhook is powered by an industrial gas engine using standard automotive parts throughout. It travels on, and is supported by, two wire rope cables anchored at both ends. It obtains traction to move in either direction on two additional, separate, and stationary ropes. With a capacity speed of 35 mph, the Skyhook rides either forward or backwards, or with side feeder lines for increased mobility. The lines are supported by trees, poles or towers at intervals of 500 to 2000 feet. Both machine and load travel through open jacks, making unlimited length of the Skyroad possible.

LOADED SKYHOOK travels through open jack. It is the open jack that makes unlimited length of Skyroad possible.

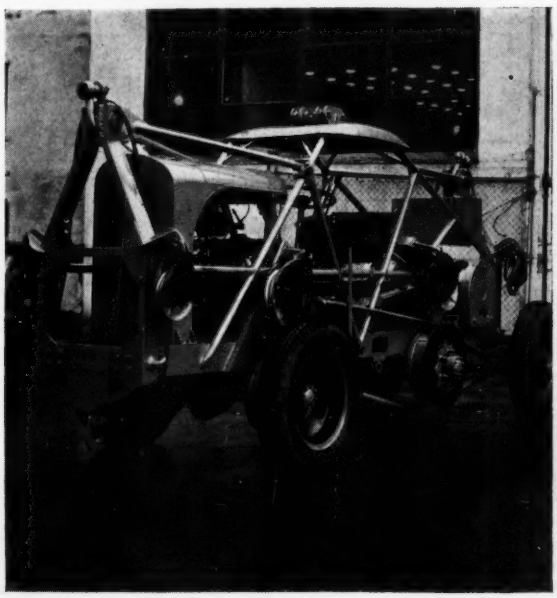
The operator rides in the Skyhook carriage, and is thus able to control all functions easily and precisely. Once on the ground the machine, manufactured by the Pointer-Willamette Co., travels to the job on its own tires. Anchored on blocks it becomes its own "rigging up" machine.

It may be converted from one use to another by employing skips, hooks, electromagnets, buckets or other types of carriers. One of the pictures illustrates the Skyhook carrying two loaded nets of asphalt in pails. The model can be used singly or in pairs depending on the task to be performed. While the capacity is largely controlled by the main supporting cables, ten to 20 tons is well within practical limits.

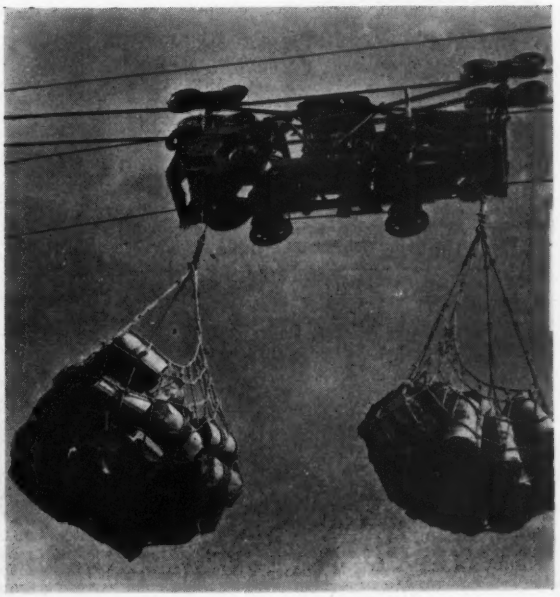
John A. Roebling's Sons Co., Trenton, N. J. furnishes all the wire rope used in the operation of the Skyhook, as well as holding a joint sales agreement on it with the Pointer-Willamette Co.

The equipment performs such jobs as, logging, portable sawmill operations, open storage yard work, clearing lakes, quarry work, mine and waste disposal, ship loading and unloading, open mining, laying pipe lines, and bulk material handling jobs, among others.

CLOSE-UP of the Skyhook. Supporting lines run through supports on cab roof and front and back extensions. Highway wheels are removed when not needed for land travel.



SKYHOOK IN ACTION. It is shown here carrying nets of asphalt in pails. Working area is limited only to the length of the line the hoist-drum can accomodate.



CARPET HANDLING

(Continued from page 11)

control records and provides a quick method of perpetual inventory.

Cutting Is Easy

When yardage is to be cut from a roll, the crane deposits a loaded cutting table on the floor at the desired position. The weight of the table, combined with that of the broadloom, causes a set of plungers, which are set in sleeves within the framework of the table, to move upward and elevate sets of rollers. These rollers, which are spaced between the strips of webbing in the cradle, lift the broadloom free from its cradle, and make it possible for a single cutter to pull out the exact yardage needed. After the cut has been made, he need only turn back the small flap left and the roll is ready to be re-charged back into its compartment.

Data and photos, courtesy Textile Handling Equipment Co., Los Angeles.

OPPORTUNITIES

Men wanted *Jobs wanted* *Lines available*

Rates for "Positions Wanted" $4.00 minimum for 25 words, each additional word 10c; bold-minimum, limit 25 words. For all other face type or all capitals, $7.50 minimum for 25 words, each additional word 15c; limit 50 words. Box addresses count as five words. All insertions are payable in advance.

These classified columns are not intended for the advertising of new products by manufacturers, their representatives, or their distributors. These columns are limited to Help Wanted or Positions Wanted advertisements, and for the offering of used equipment by the users of such equipment.

FOR SALE

FOR SALE—One used Automatic, type TLN-2 High-lift platform truck, 27" x 54" x 9½" high platform (can be easily made into 9"). Capacity 4000#. Has Exide TLM 15-cell, 19-plate battery. Truck four years old. Price $2100.00. Skarnes Engineering & Supply Inc., 2428 Riverside Ave., Minneapolis 6, Minnesota.

USED GAS FORK TRUCK

One Motowlift Truck—Capacity 3000 Lift 108", Lowered Height 83", Fork Length 36" Solid Rubber Tired Wheels. Immediate Delivery f.o.b. Monaca, Pa. Box 8148, Flow.

FOR SALE: TOLEDO DIAL SCALE, Platform 4 ft x 6 ft Capacity—12,500 lbs. For mounting flush with floor. Like new condition. WEBER MACHINERY CO., 1801 E. 21st St. CHerry 5292, Cleveland, Ohio.

USED EQUIPMENT WANTED

WANTED
USED MATERIAL HANDLING EQUIPMENT
We buy FORK LIFT TRUCKS
Gasoline or Battery Driven
Gravity Conveyors, Hand Lift Trucks, Pallets, Cranes
A & A MACHINERY CORP.
1267 Flushing Ave., Brooklyn, N. Y.

LINES WANTED

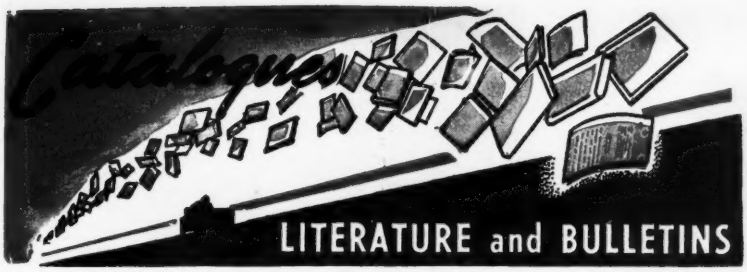
We would like to represent, in Southwest Texas, manufacturers of magnesium or other lightweight dock boards, beverage trucks, casters, wheels, etc. Joe M. Estes & Associates, 445 E. Commerce Street, San Antonio 5, Texas.

LINES WANTED—Going sales and service organization with 15 years experience in the material handling field is looking for new lines to sell to industry in North Jersey. Our firm has trained sales engineers and competent service men. Facilities include 4000 sq. ft. of shop space and large display room on major highway. Over 200 good industrial contacts. Box 8348, Flow.

POSITIONS WANTED

Industrial Engineer (MS), BSME, honor student, specialized unit load handling, technical writing, four years shop experience, seeks position in materials handling. Box 8248, Flow.

The FLOW DIRECTORY OF MATERIAL HANDLING, a 400-page volume, is a valuable reference guide. It may be ordered from FLOW Magazine at $6 per copy.



The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

25—Tape Dispenser . . . A pamphlet is available from the Ideal Stencil Machine Co. illustrating and describing its Clip-A-Tape dispenser. Operating advantages, industrial applications and specifications are given.

26—Shipping Containers . . . The General Box Co. offers a booklet, "The G. B. Container Album." Action shots of items as they are actually being packed are featured together with several types of shipping containers designed by the company's packaging engineers.

27—Floor Resurfacing . . . The Stonhard Co. has issued a maintenance manual "Over The Rough Spots." It is designed for those desiring information on patching holes and ruts, or resurfacing any type floor in from 24 to 48 hours.

28—Diesel-Electric Locomotives . . . For those interested in diesel-electric locomotives, an eight-page brochure from The General Electric Co. Five models are pictured, together with specifications, advantages, and varied industrial applications.

29—Conveyors . . . Gravity wheel, floor-to-floor, slat, portable, and belt conveyors are included in a bulletin from Sage Equipment Co. Each model is pictured together with detailed description.

30—Portable Cranes . . . From The Hill Acme Co., a four-page leaflet on its line of portable cranes. Action photos are shown as is general information and construction details, and individual dimensions.

31—Industrial Truck Batteries . . . For those whose problems embrace the purchase and maintenance of material handling systems, two six-page, two-color, technical brochures on industrial truck batteries from the Gould Storage Battery Corp. The literature includes liberal illustration, description, and full technical data on the Gould "Thirty" and the Gould "Kathanode" batteries.

32—Fork Trucks and Tractors . . . From the Clark Equipment Co., a four-page condensed catalog. It features a tabulated summary of principal specifications of its fork-lift trucks, towing tractors and tructractor models. Dimensions, weights, capacities, and turning radii are given for both gas-powered and electric battery-powered.

33—Steel Strapping . . . For those interested in steel strapping, a 24-page booklet is available from the Signode Steel Strapping Co. Applications ranging from heavy machinery to packaged flour are shown. Also pictured and described are strapping tools, stretchers, sealers, and strapping and tying machines.

34—Filling Machines . . . From The Weigh Right Automatic Scale Co., a pamphlet illustrating and describing its line of scale filling and packaging machines. Models ranging in capacity from ⅛ ounce to five pounds are shown together with detailed description.

Tramp iron can and does cost a lot of Money! It causes Fires and Explosions . . . it Damages or Destroys Valuable Machinery.

Eliminate your "TRAMP-METAL" before or during processing with HOMER "non-electric", Permanent Plate Type or Pulley Magnetic Separators. HOMERS are PERMANENT . . . they require no wires or electrical accessories and are "self-insulating" when mounted on conductive material. Write for bulletins today.

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PERMANENT MAGNETIC SEPARATORS — PLATE TYPES AND PULLEYS

Save Our Space

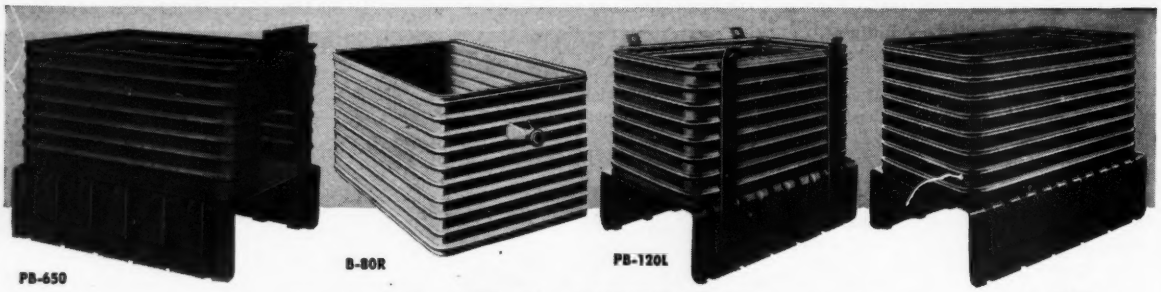
That was the signal for Lewis Skid Boxes to come to the rescue of a radio equipment manufacturer. These uniformly-sized Lewis Containers serve a dual purpose — efficient materials handling, plus space saving storage. Another example of the versatility of Lewis Industrial Containers.

Send for details.

G. B. LEWIS COMPANY
608 Mont. Street • Watertown, Wisconsin

SKID BOXES
STACKING BOXES
SHIPPING BOXES
BOX TRUCKS

LEWIS
INDUSTRIAL CONTAINERS



WIDE RANGE OF TYPES AND SIZES
Assures Efficient Truscon Steel Box Performance

● The need of your particular materials handling and storage operations can be met efficiently with one or more types from the many Truscon Steel Box and Skid models. These can be used for a wide range of parts or finished products, for quick, labor-saving movement by hand- or power-lift trucks or cranes. Let us give you the benefit of our experience in making materials handling and storage easier and more economical for you. Write for illustrated catalog on Truscon Steel Boxes and Platform Skids.

Standard Tote Box—One-piece drawn steel box manufactured from 16 gauge cold rolled steel. Used in handling miscellaneous small parts. Boxes are so designed that nesting is practical and easy.
Dimensions: 12" x 18" x 6¼".

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ADVERTISERS IN THIS ISSUE

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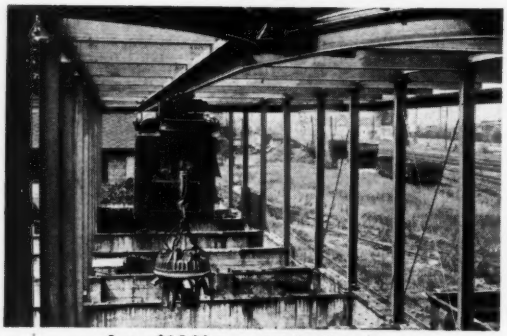
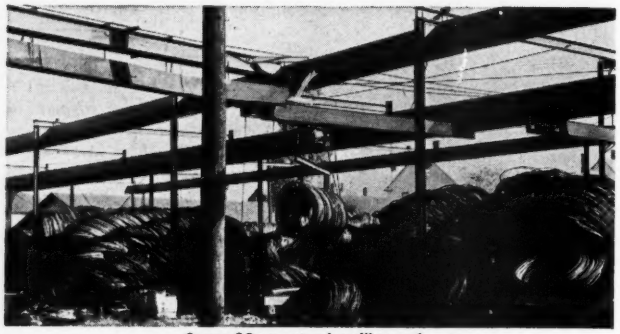
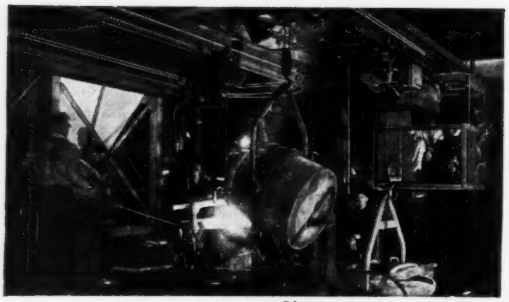
FOR LOWER COST HANDLING



Saves $25.00 per car unloading pig.



Saves 32c per ton handling rod.



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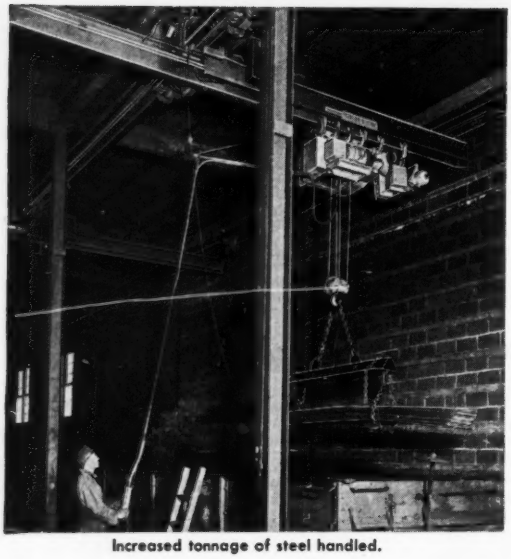

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Any system, regardless of how complicated, will pay for itself in time and money saved. One company reports a savings of 86% in handling costs.

Whatever your handling problem may be, there is an American MonoRail system adaptable to it. From the simplest hand-operated unit to the most complicated fully automatic system, American MonoRail engineers can suggest a system best suited to your problem.

SEND FOR BULLETIN C-1. A 56-page book showing successful applications of American Mono-Rail Systems.

THE AMERICAN MONORAIL COMPANY

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To cut your packing costs and increase your unit production — consult Brainard's packaging and loading engineers. There is no obligation.

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Each distributor subscribes for his active and most important material handling equipment customers, and for his best prospects. The jobber pays us $1.20 per year per subscription. These constitute an "identifiable" readership composed of authenticated, known buyers and users . . . the distributors being the authenticating agents! Thus—under "C B P"—Readers-Buyers become synonomous and interchangeable . . . whether you—as the manufacturer—sell direct or through distributors—FLOW guarantees CERTIFIED BUYING POWER. These 27,000 reader-buyers comprise the known national market for material handling equipment and, therefore, are the people to whom you must tell your story. FLOW reaches more than just "people"—or "names"—or "positions"—it reaches BUYERS. Here is "CERTIFIED BUYING POWER"—around which you can most profitably build your sales and merchandising campaign.

Flow MAGAZINE